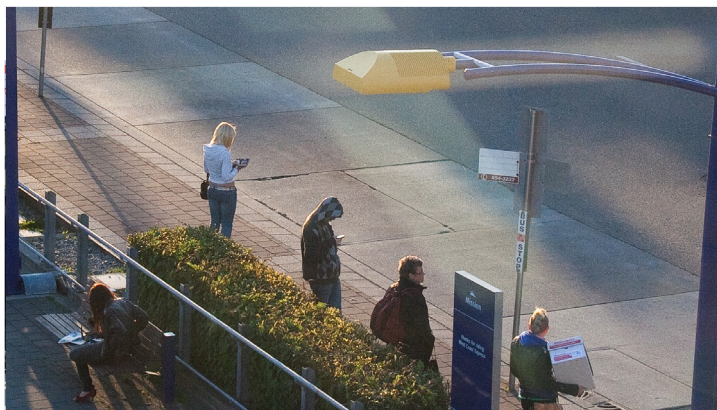


Strategic Review of Transit in the Fraser Valley

Foundation Paper #4



Exploring the Possibilities for the Fraser Valley

Prepared by:
URBANSYSTEMS.



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1.0 INTRODUCTION

The Fraser Valley Regional District (FVRD) offers residents, workers and visitors a high quality of life, with a mixture of urban, suburban, rural, and natural environment experiences. The region is home to approximately 263,000 residents living within its six municipalities and seven Electoral Areas. Residents in the region benefit from growing employment opportunities closer to home and affordable housing prices relative to other parts of the Lower Mainland. Over the next 25 years or so, the region's population is expected to increase by approximately 70%, or an additional 189,000 people. Much of this growth is anticipated to occur within the region's urban growth boundary. As such, managing this growth and fostering the sustainability of these communities is essential particularly in the area of reducing automobile dependence and increasing travel options.

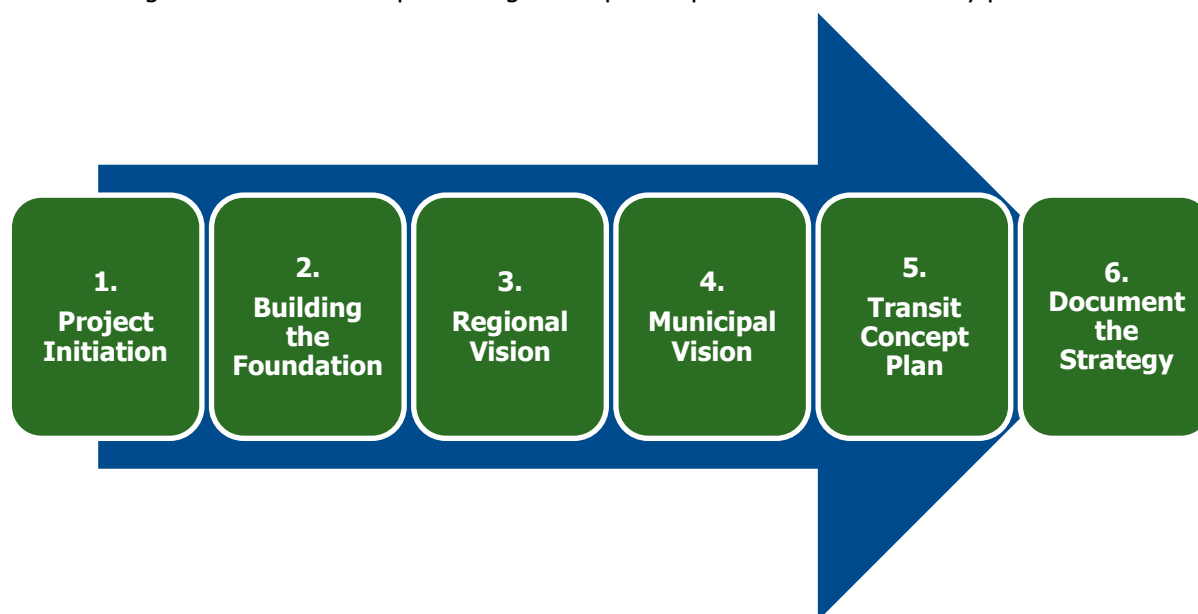
One of the key growth management goals identified in the FVRD's Regional Growth Strategy (RGS) is to 'Increase Transportation Choice and Efficiency', which includes reducing dependency on single-occupant vehicle travel and enhancing commitments toward the provision of attractive bicycle and pedestrian facilities, as well as a broader range of transit services. This includes not only the provision of additional conventional transit within and between communities, passenger facilities, but also the potential use of community shuttles using both fixed and demand-responsive services for local travel within Fraser Valley communities. A broader range of local and regional transit services supported by supportive policies and measures – such as increased mixture of uses and density, attractive and accessible pedestrian facilities, improved trip planning and passenger information, park-and-ride facilities, transit exchanges, etc. – will complement the RGS goal for a 'network of sustainable communities.'

Significant strides have already been made toward enhancing transit services in the Fraser Valley in recent years. BC Transit, in connection with local municipalities, has undertaken comprehensive assessments of transit markets and the performance of transit services for the Fraser Valley, and has identified needs for improvement through their five year planning processes. Although the Provincial Transit Plan does not specifically identify transit strategies for the Fraser Valley, the foundation goals for reduced greenhouse gases, increased transit mode share and complete communities are used to guide the development of a long-range transit strategy for the Fraser Valley.



1.2 The Process

The ***Strategic Review of Transit for the Fraser Valley*** represents an opportunity to address historical issues and challenges of making transit attractive for the Valley. It will include the development of a long-term strategy for local, regional and inter-regional transit services, facilities and supportive infrastructure over the next 20 years. The Strategic Review will also identify implementation priorities for the next five and ten years as well as the responsibilities for advancing the shorter-term initiatives. The process for developing the Strategy is separated into six phases, with the development of three integrated Foundation Papers being developed as part of the second study phase.



The Foundation Papers included in Phase 2 are intended as 'think pieces' to build on historical work and to shape and assist in the development of Municipal and Regional Visions for transit in the Fraser Valley.

- ***Foundation Paper #1 – Transit Market Analysis.*** In order to develop an effective long-term strategy for transit in the Fraser Valley, it is important to identify transit services and facilities that are targeted toward enhancing the experience for existing customers, may attract new transit customers that are traveling today by automobile and will be aligned with long-term travel markets. This Foundation Paper provides a comprehensive assessment of the local, regional and inter-regional transit markets in the Fraser Valley. Ultimately, the transit services and strategy for the Fraser Valley will be aligned with those markets where there is the greatest potential to increase transit ridership.



- **Foundation Paper #2 – Summary of Relevant Practices.** The success of transit in the Fraser Valley requires a unique combination of transit services and facilities (that are best suited to the transit markets being served), transit friendly land use patterns and the provision of transit supportive facilities and infrastructure. This Foundation Paper examines a number of practices and arrangements that are used in other communities that may be considered in developing a long-range strategy for the Fraser Valley.
- **Foundation Paper #3 – Managing and Financing Transit in the Fraser Valley.** The historical means of governing and funding transit is an ongoing challenge because communities in the Fraser Valley have grown significantly over the last years or so years. Although the Strategic Review of Transit in the Fraser Valley will NOT be identifying and evaluating alternative forms of governance and financing transit, this Foundation Paper provides an overview of the current models for governing transit in British Columbia, and highlights some of the historical facts about funding transit in the Fraser Valley and a comparison to other communities in Canada.

1.3 Foundation Report Features

This Foundation Paper summarizes the process to explore a broad range of transit possibilities that are relevant to Fraser Valley communities as well as the current and future potential travel markets. Individual concepts that service the various travel markets were developed and evaluated using both quantitative and qualitative criteria that support the overall goals and objectives designed for the Strategy. For the purpose of this Foundation Paper, the travel markets explored within Foundation Paper #1 – Transit Market Analysis are generally separated into three distinct categories as follows:

- **Local** – all travel within the established communities of the Fraser Valley including Abbotsford, Chilliwack, Mission and Kent/Harrison. For example, trips which begin and end within Abbotsford. Within each community, the largest generators of trips were identified through market research and other travel data.
- **Regional** – all travel between communities in the Fraser Valley. For example, all trips which begin in Abbotsford and end in Mission are regional trips. Once again, the market research and other travel data provided insight to the most popular destinations between communities of the Fraser Valley.
- **Inter-Regional** – all travel between the Fraser Valley and Metro Vancouver. For example, trips between Abbotsford and Langley or trips between Mission and downtown Vancouver. The travel data indicated that the inter-regional travel between the Fraser Valley and the Surrey-Langley areas as well as the Northeast Sector were among the most significant inter-regional travel markets.



Each of the local, regional and inter-regional transit service concepts are developed largely based on the potential transit markets as well as planned land use patterns were evaluated individually based on their projected performance as well as other qualitative indicators. In some cases, concepts for local, regional and inter-regional services are compared to other concepts to support inclusion in the long-term strategy in order to help achieve some of the broader transportation and livability goals for the Fraser Valley.

This Foundation report is separated into three sections:

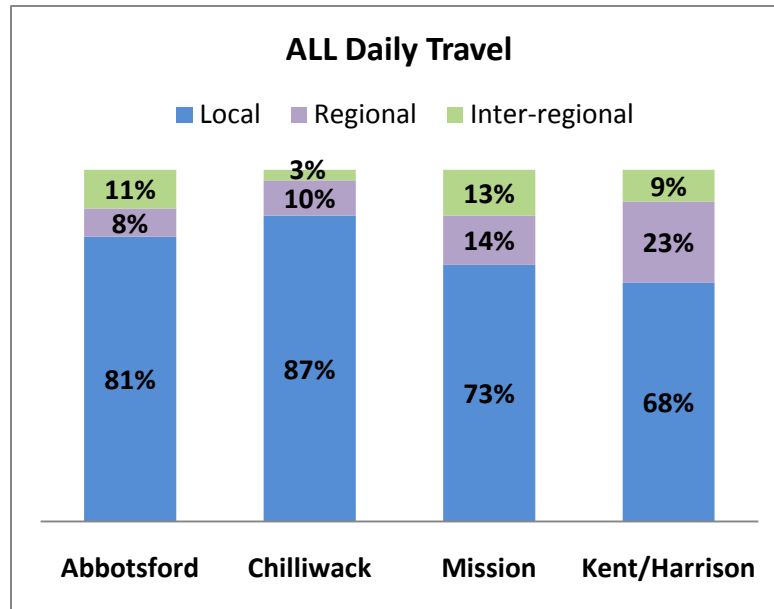
- **Section 1** – summarizes the overall approach toward identifying and evaluating various transit concepts to serve local, regional and inter-regional travel. Recognizing the need to increase the range of transit choices within the Fraser Valley to serve the distinct travel markets, the range of potential services is examined.
- **Section 2** – highlights the challenges and opportunities for local transit improvements and identifies alternative concepts for enhancing local transit, including restructuring existing services as well as building on current service levels with a broader range of transit services or 'brands.' The specific types of services are generally aligned with the planned land use patterns and projected travel markets within each of the communities of the Fraser Valley.
- **Section 3** – identifies opportunities for regional and inter-regional transit bus and rail services providing connections between Fraser Valley communities as well as with Metro Vancouver. This section explores transit service concepts connecting the communities of the Fraser Valley regionally and inter-regionally are explored in order to identify the likely range of possibilities that may be included in the 20-Year Transit Strategy and Vision.

1.4 Summary of Transit Markets & Range of Transit Services

Local transit services are currently provided in Abbotsford, Mission and Chilliwack primarily with conventional bus routes. The service levels and frequencies vary significantly throughout the day and amongst each community. Possible operational efficiencies can be gained through a restructuring of local routes to better align services with significant local travel markets. Figure 1.1 below illustrates the current travel markets for each community in the Fraser Valley as presented in *Foundation Paper #1 – Transit Market Analysis*. These patterns underscore the fact that local travel makes up the majority of trip making in most established communities in the Fraser Valley. With planned population and employment growth in each community, local trip making is projected to remain at over 80% of all daily trips in Abbotsford and Chilliwack, and approximately 70% of all trips in Mission as well as Kent-Harrison.



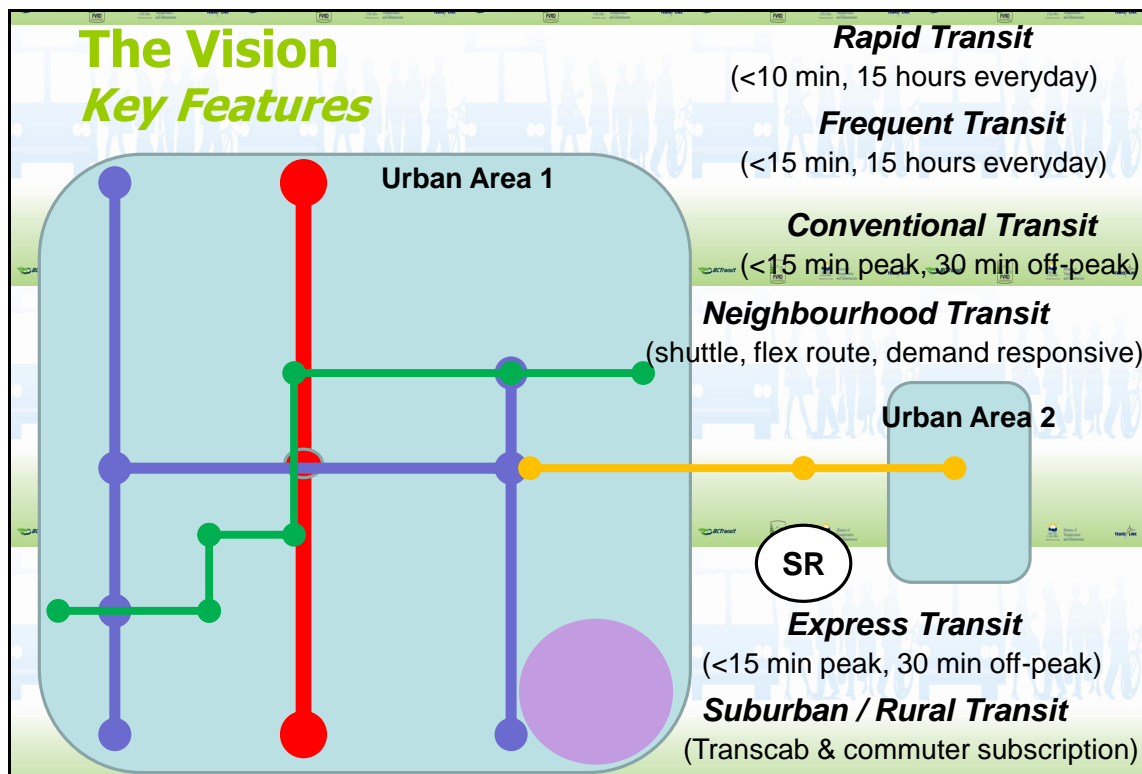
Figure 1.1 – Travel Pattern for Fraser Valley Communities



Within each local, regional and inter-regional market, land use and travel patterns are unique, requiring something other than a “one-size fits all” solution to make transit attractive. Figure 1.2 illustrates the broader range of transit services required to serve the key travel markets and to support existing and planned land uses in each community.



Figure 1.2 – Potential Range of Transit Services in the Fraser Valley



- ⇒ **Rapid Transit** is a premium service with frequent, reliable and direct services throughout the day operating in areas protected from traffic congestion with integrated systems such as transit signal priorities and enhanced amenities for passengers. Rapid Transit corridors can often be described as the 'spine' of the transit system where customers do not require a schedule and where land use density and mixture is significant in order to support community goals and the ridership needed to invest in a rapid transit system. In urban areas of Abbotsford and Chilliwack, Bus Rapid Transit (BRT) is considered along the primary corridors of each community even though the planned land uses may be further shaped at key nodes (<10 minute, 15 hours per day). Inter-regional rail rapid transit services in the form of a commuter rail service are also examined between Chilliwack-Abbotsford-Langley-Surrey as well as between Mission and Abbotsford as an extension of the West Coast Express (peak only and daily services).
- ⇒ **Express Bus** services are typically used to support longer distance local, regional and inter-regional travel with attractive service levels (<15 minute peak and 30 minute off-peak) and fewer stops than most conventional services. As regional or inter-regional services, Express Buses are considered within the Transit Strategy between communities of the Fraser Valley as well as inter-regionally between Abbotsford and Langley-Surrey as well as between Mission and the Northeast Sector of



Metro Vancouver. These services would connect with other premium transit services planned along major corridors in Metro Vancouver.

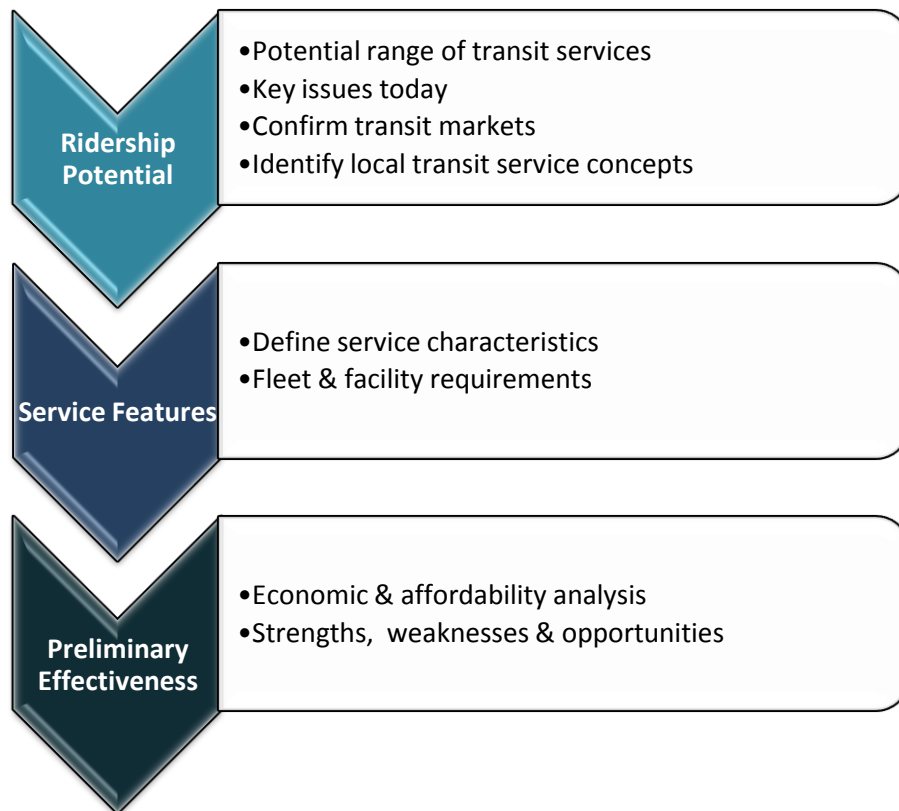
- ⇒ **Frequent Transit** services also serve as the foundation of the local transit system, providing attractive service levels all day and evening (<15 minutes, 15 hours per day). These service levels would provide direct and frequent services along corridors where the projected two-way travel demands are high and there is a significant scale, density and mixture of land use patterns. In many cases, local municipalities may wish to examine the planned land uses along these candidate corridors in order to support local commitment to sustainable growth patterns and to build ridership that will support frequent transit service.
- ⇒ **Conventional Transit** connects with the frequent and BRT services with attractive peak services and connections to local activity nodes (<15 minute peak, 30 minute off-peak). Within each of the communities of the Fraser Valley, Conventional Transit services will support local trip making and ensure convenient access to the 'spine' of the transit network.
- ⇒ **Neighbourhood Transit** services for lower density areas of the community with reasonable peak and off-peak frequencies, including circulator routes, shuttle routes, flexible services (such as route and stop deviations) as well as demand responsive services. Rather than expand conventional transit services, many areas of the Fraser Valley today and in the long-term could explore the use of more flexible services which support local trip making and are generally less expensive than conventional bus services. In fact, various forms of Neighbourhood Transit may be an interim step toward providing fixed route, conventional transit service in some areas.
- ⇒ **Suburban and Rural Transit** services that include private and/or public subscription or taxi services in very low demand areas. In the rural areas of each community, there are several key generators that could not reasonably support any of the above public transit service alternatives previously described. In those parts of the Fraser Valley where key generators of trips have been identified by staff and through the consultation process, private transportation alternatives may be explored along with other forms of public and private transportation services such as a carpool/vanpool subscription service, shuttle service or a taxi service in the form of a transcab.

1.5 The Development & Screening Process

A range of transit service concepts for the local, regional and inter-regional market in each of the communities within the Fraser Valley was explored. The overall process to develop and evaluate these concepts is illustrated in Figure 1.3 followed by a description of each phase.



Figure 1.3 – Process to Develop and Evaluate Service Concepts



Ridership Potential – one of the key metrics used to develop each component of the local service concepts was the potential to attract ridership. This is critical to any service planning effort in order to maximize the efficiency and effectiveness of transit services. An assessment of key issues was conducted in order to understand where some of the challenges exist today and where some of the potential opportunities may exist in the future. The ground work for developing the concepts was to first identify the potential range of transit services that could include paratransit, conventional transit, frequent transit or rapid transit. These service types were then aligned with the potential transit markets identified through analysis of existing ridership, land use and demographic trends, market research and ridership forecasting for 2031. The final component of this phase was to identify those local service concepts that address some of the key challenges that were identified early in the process, are aligned with current and future potential travel markets and provide adequate service levels.



Service Features – this next phase of the process identified the features of each service concept such as the route alignment, headway, stop spacing, time of day and others meets customer needs. For rapid transit concepts, support facilities such as dedicated bus lanes, signal priority, bus exchanges and others are examined. These features provide for more efficient and reliable transit services and were included in order to account for significant capital costs. Along with the facility improvements, an estimate of fleet requirements was conducted to better understand the number of vehicles that would be required to provide services for each concept.

Preliminary Effectiveness – the final phase in developing each of the service concepts was to gauge the effectiveness of the service concept based on both quantitative and qualitative features. The quantitative assessment included the development of estimates for the following components of each service concept that are also common to the regional and inter-regional service concepts:

- **Peak frequencies** – a range of general service frequencies during the peak periods.
- **Daily Boardings** – a forecast of the daily boardings for the local transit system for the 2031 horizon.
- **Transit Mode Share** – an estimate of the share of total local trips (2031) that are made using transit with the service improvements in place.
- **Vehicle Fleet** – an estimate of the total required fleet of transit vehicles in order to provide services at the levels anticipated for each scenario.
- **Service Hours** – an estimate of the annual service hours required to provide local transit services at the levels anticipated for each scenario.
- **Service Hours per Capita** – an estimate of the total (2031) service hours per capita for each community in order to measure how service hours are keeping up with or exceeding population growth.
- **Vehicle Operating Cost** – an estimate of the annual vehicle operating cost (2031 \$) by multiplying the annual service hours by a standard cost per service hour to provide bus-based services.
- **Cost per Ride** – this measure represents the annual cost of providing the service including operating costs, vehicle debt servicing costs and annualized facility costs (2031 \$) then divided by the projected 2031 transit ridership.
- **Cost per Service Hour** – this measure represents the annual cost (2031 \$) of providing the service including operating costs, vehicle debt servicing costs and annualized facility costs and is then divided by the total service hours.



These quantitative measures were then used to evaluate and compare local, regional and inter-regional concepts where applicable in order to highlight the most efficient option in terms of meeting the future local travel needs of each community. In order to supplement the quantitative assessment and to better understand the features of each service option, a qualitative assessment of the performance of each concept was also developed. This was done by assessing the strengths, weaknesses and opportunities of each scenario. Both the quantitative and qualitative assessments were developed for Abbotsford, Chilliwack and Mission.



2.0 POSSIBLE DIRECTIONS FOR LOCAL TRANSIT

This section highlights the general challenges facing each community and identifies the opportunities to enhance local transit services in Abbotsford, Chilliwack and Mission. The general challenges facing each community with current transit services (as detailed in *Foundation Report #1 – Transit Market Analysis*) are briefly highlighted, and the opportunities to re-position transit in each community over the next 20 years or so based on planned growth and development as well as the most significant transit markets are examined. Alternative concepts for transit within each community are developed and evaluated based on criteria that support the overall goals and objectives.

2.1 Common Challenges

Early in the process, agency and public stakeholders discussed the key issues and concerns regarding existing local services in each community. This review along with a comprehensive assessment of current services suggested that there were some common features and challenges to making transit attractive in each community. As presented in previous Foundation Papers, the amount of transit services provided in the Fraser Valley is fundamentally very low when compared on a per capita basis to most other communities in the Province, let alone those communities where transit is seen to be an attractive alternative. On a per capita basis, the number of transit service hours provided in the Fraser Valley is less than half of Kelowna or Kamloops and approximately one quarter of that in Metro Vancouver. At the most basic level, it is extremely difficult, if not impossible, to make transit attractive across the community with the amount of service hours currently provided. For those services provided however, the general challenges include, but are not limited to the following:

1. ***The frequency of peak period services are modest to low in most areas.*** In fact, peak frequencies are 15 to 30 minutes along some of the major corridors in core areas of each community, and are 30 minutes or more in many other areas in the core and for all outlying suburban areas. To be an attractive alternative to driving, peak frequencies should ideally be less than 15 minutes along major corridors with strong transit markets.
2. ***Similarly, off-peak frequencies are also modest in most areas (midday, evening and weekends).*** Off peak frequencies are generally 30-60 minutes with many services at 60 minutes or more in outlying areas. Off-peak services should be at frequencies of less than 30 minutes to be attractive.
3. ***Most services are indirect for customers on at least one leg of their trip*** with one-way looping routes and sometimes multiple transfers between key areas.



4. ***Some areas of communities are not within a reasonable walking distance of transit services.*** The limited coverage of service coupled with the challenging topography in some areas makes it difficult to walk to and conveniently access transit services.
5. ***The scale, mixture and density of land uses within and outside the downtown are not typically supportive of frequent and direct transit services.*** In some areas, planned growth and development patterns will provide opportunities for more transit oriented land use patterns that may be enhanced through subsequent planning by local municipalities.

In addition to increasing the amount and the range of local services as described in Section 1.4, there is significant potential to capture more of the local travel markets in Abbotsford, Mission and Chilliwack with the following general improvements to the local transit system:

- **Optimize existing resources** by realigning services to be more direct between key generators where they are most effective at getting customers to their destinations quicker. This would include allocating services to where they would be most effective along key corridors and connecting key destinations. In some cases, this would mean limiting services in low density areas.
- **Restructure routes with greater focus on key generators** to provide higher frequency services throughout the day along key corridors in the most significant transit markets.
- **Significant increase in service levels** on key corridors to provide services at 15 minutes or better throughout most of the day.
- **Broader range of services** where attractive and direct services are provided in the established areas where transit ridership is greatest, and neighbourhood and flexible transit services in lower density residential and employment areas.

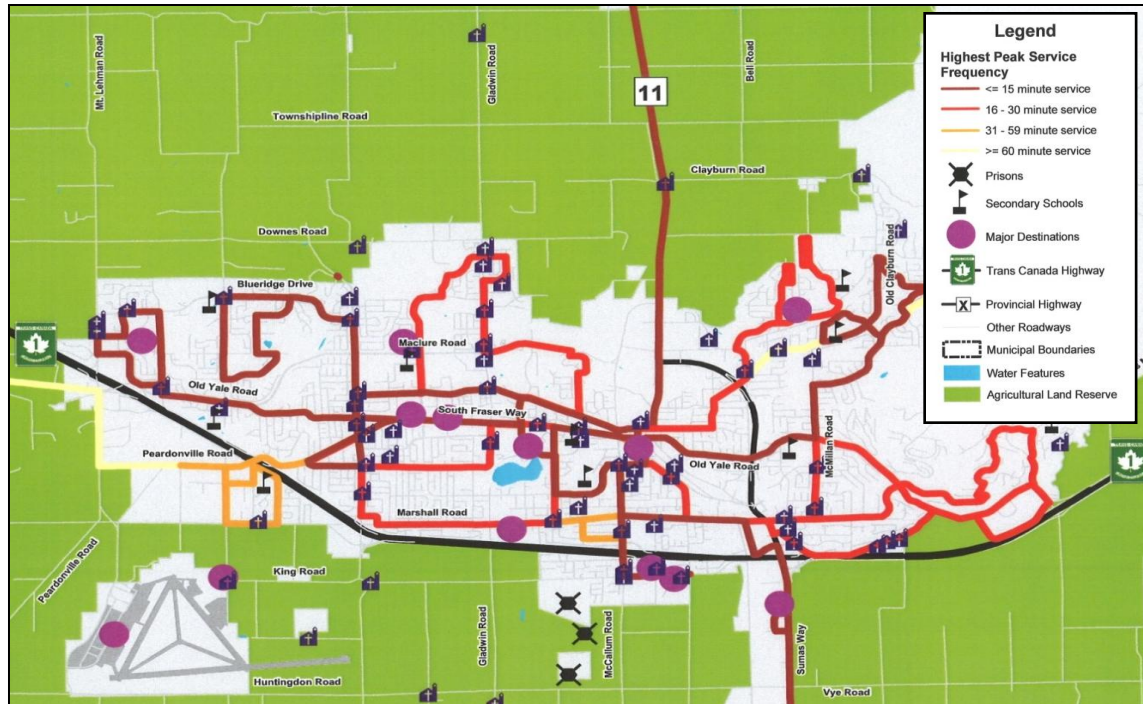
2.2 Local Services in Abbotsford

The Abbotsford area represents the largest local travel market given its population and employment as well as key destinations including the airport, regional hospital, University of the Fraser valley (UFV), South Fraser Way and Sumas Way commercial districts as well as other key activity nodes. According to several data sources¹, most trips that start and end in Abbotsford highlighting the completeness of the community and the fact that residents can live, work and recreate within their community. Over the next 20 years, Abbotsford's population is forecast to grow by over 60% with a corresponding significant increase in local trip making. Transit services can be restructured and configured to meet local travel needs and capture a greater share of the overall travel market helping communities in the Fraser Valley achieve transportation and livability objectives. Figure 2.4 below illustrates the general structure of the transit system as well as levels of peak period transit service currently provided in Abbotsford.

¹ 2004 Fraser Valley Trip Diary Survey, 1996 Census Journey to Work and 2009 Fraser Valley Market Research.



Figure 2.4 – Structure and Levels of Existing Transit Services in Abbotsford



As mentioned previously, there are several key issues with transit services, namely the directness, frequency and types of services. The following sub-sections provide a description of the preliminary concepts as well as a synthesis of the preliminary screening and evaluation process for enhanced transit services that would be provided locally in Abbotsford.

2.2.1 Preliminary Concepts

This section provides a description of the three possibilities for local transit services in Abbotsford: (1) Intensifying Existing Services, (2) Hierarchy of Services Concept 1, and (3) Hierarchy of Services Concept 2. The proposed changes help address some of the key issues with current services as described earlier helping to direct services where they will be most effective and ultimately attract more ridership.

Because of the significant expansion of services for all three scenarios, adding more buses to the current fleet will require added support facilities. A new depot/garage will be required in order to store and maintain a larger and more diverse fleet of transit vehicles. A new transit exchange and layover facility with more capacity will be required to efficiently transfer passengers between routes and to serve as a focal point for local and regional services.

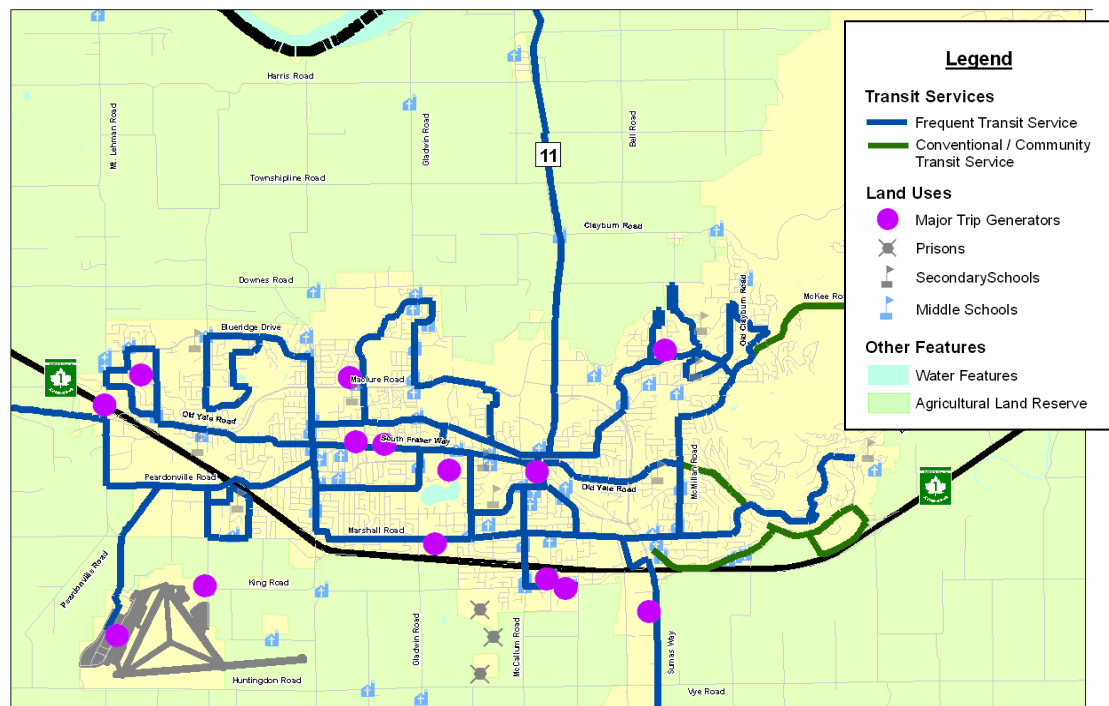
The three possibilities for local transit services within Abbotsford are described as follows:



a. Intensify Existing Services

The first option for enhanced local services in Abbotsford is to simply increase the frequency of existing transit routes to a level where most routes operate at a 15-minute or better frequency throughout most of the day. There are some benefits to this approach, namely that existing customers are familiar with the current routing structure and would receive better service levels overall, and expanding generators such as downtown Abbotsford, Cascade Industrial area, UFV Campus as well as growing residential areas of Clayburn and McKee Road. This option, however, does not address some of the key challenges mentioned earlier including the directness of service and would not likely attract new markets of trip makers that are driving or being driven today and in the long-term. Figure 2.5 illustrates the structure and types of service that could be provided with this concept.

Figure 2.5 –Intensifying Existing Local Services in Abbotsford

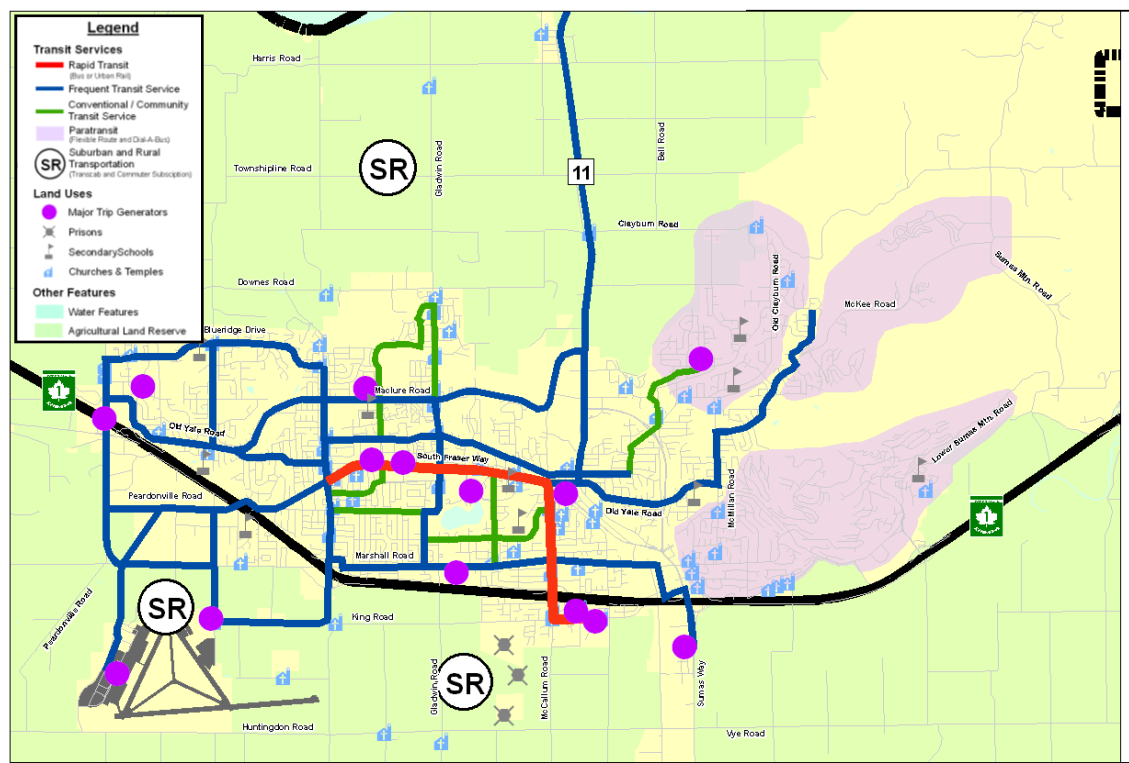




b. Hierarchy of Services Concept 1

The second concept considered for enhancing local transit in Abbotsford is to restructure and to provide extensive expansion of services such that they are better aligned with the local travel markets. Within the core area of the City, Bus Rapid Transit (BRT) services would be provided on the South Fraser Way/McCallum Road/King Road corridor to connect the Civic Precinct with the University of the Fraser Valley and other key intermediate stops at Seven Oaks Mall, Fraser Valley Regional Library and other major activity nodes. BRT would provide high frequency, limited stop service with a dedicated transit-only lane in each direction. Frequent Transit services would be provided along several other major corridors where the long-term transit market potential could be higher in the long-term. In lower density areas of the City, conventional and community bus services may be provided to reflect the lower transit potential. In the rural areas of the City where transit generators exist, subscription and transcab services may be examined as private and/or public sector services. Figure 2.6 illustrates the structure and types of services that would be provide with this concept.

Figure 2.6 – Abbotsford Hierarchy of Services Concept 1

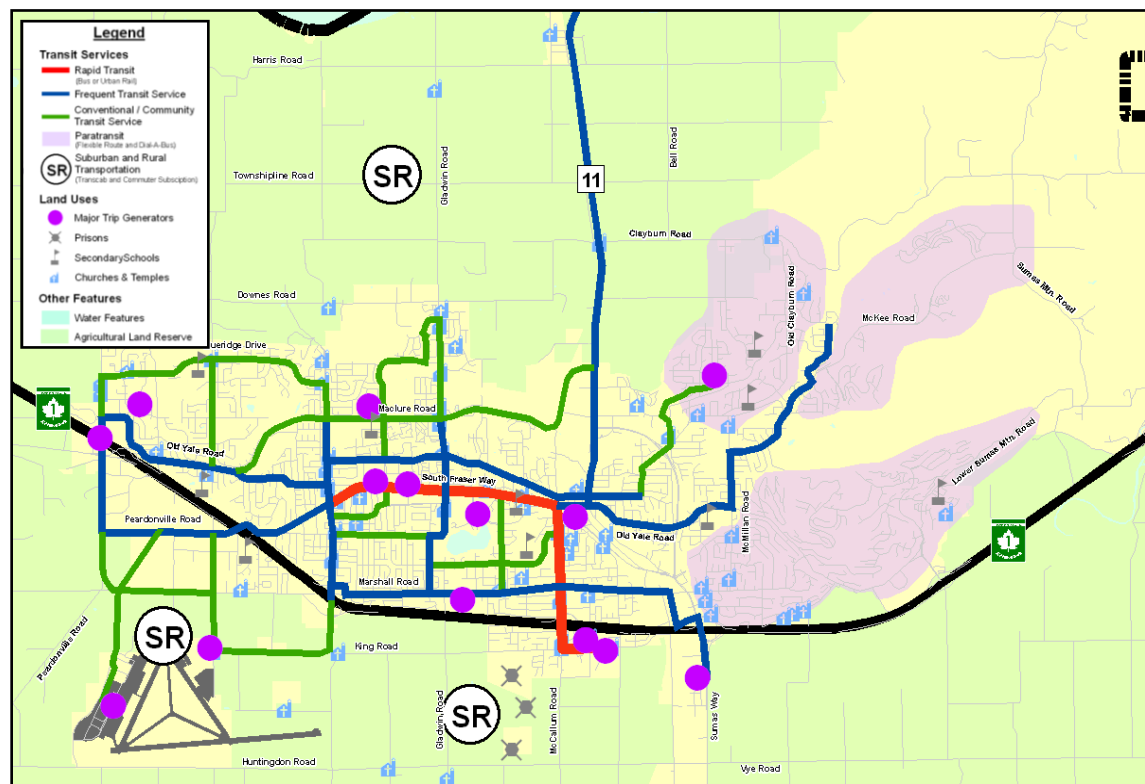




c. Hierarchy of Services Concept 2

The final concept for enhancing local services in Abbotsford is a slight modification to the previous concept in that it converts some of the Frequent Transit corridors where existing and planned densities are lower to conventional bus services, thus making better use of fewer resources. In particular, this concept pulls back service from some of the outlying areas and reallocates it to routes that serve the core area and major activity destinations. With very attractive services along key corridors, these services will begin capturing more of the choice travel market and begin to support two-way ridership patterns. The Bus Rapid Transit service from the previous concept would be retained within this concept. From a cost per ride perspective, this option would likely be the most efficient in terms of attracting ridership and providing good service levels to corridors and destinations that will generate significant boarding and alighting activity throughout the day. Figure 2.7 highlights the structure and types of service that would be provided with this concept.

Figure 2.7 – Abbotsford Hierarchy of Services Concept 2





2.2.2 Preliminary Screening & Evaluation

This section summarizes the preliminary screening of each local concept for Abbotsford as previously described in terms of the standard performance measures as well as a qualitative assessment. Each of these scenarios presented provides a significant increase in the amount of transit services that is delivered locally in Abbotsford.

The measures of performance and qualitative assessment of the three Abbotsford concepts are summarized below in Tables 2.2 and 2.3 respectively.

Table 2.2 – Performance Measures of Abbotsford Concepts

Corridor Connections	Peak Frequency (min)	2031 Daily Boarding (# psgrs)	2031 Transit Mode Share	Fleet (# buses)	Annual Service Hours	2031 Service Hours per Capita	Annual Vehicle & Operating Cost (\$mil 2031)	Cost / Ride (2031)
TODAY	15-60	5,800	2 %	22	50,500	0.4	\$7.6	\$4.35
A. Intensify Existing Services								
<i>Frequent Transit</i>	10-30	11,600	2.5%	50	195,000	1.0	\$24.8	\$7.10
<i>Conventional/Community</i>								
B. Hierarchy of Services (1)								
<i>Rapid Bus</i>	>5-30	17,400	<4.0%	60	218,000	1.1	\$27.7	\$5.30
<i>Frequent Transit</i>								
<i>Conventional/Community</i>								
<i>Paratransit</i>								
C. Hierarchy of Services (2)								
<i>Rapid Bus</i>	>5-30	17,400	<4.0%	60	200,000	1.0	\$25.7	\$4.90
<i>Frequent Transit</i>								
<i>Conventional/Community</i>								
<i>Paratransit</i>								



Table 2.3 – Qualitative Features of Abbotsford Concepts

Corridor Connections	Type of Service	Strengths	Weaknesses	Opportunities
A. Intensify Existing Services	Frequent Transit	<ul style="list-style-type: none"> Enhanced service frequencies along all existing routes Maintains maximum coverage of current services Significantly enhanced service levels for current transit markets 	<ul style="list-style-type: none"> Existing indirect route structure is maintained Provides greater levels of conventional service in low density areas Significant increase in cost relative to demands Lower than desired effectiveness (\$7.10/ride) 	<ul style="list-style-type: none"> Refine routing of frequent services to major roads only if deemed desirable option to work with
B/C. Hierarchy of Services (1&2)	Frequent Transit	<ul style="list-style-type: none"> Increased services for areas with greatest market potential Most residents within 400m of frequent transit service Paratransit services maintain similar levels of coverage and flexible service for low density areas 	<ul style="list-style-type: none"> Increases transfer trips between paratransit and frequent transit services Planned densities along frequent and rapid transit corridors are modest and may limit success Slightly higher than desired cost per ride projected (\$5.30 to \$4.90) 	<ul style="list-style-type: none"> Reduce the number of frequent transit corridors to conventional/ community based services Work with Abbotsford to increase scale and densities nearby frequent and rapid transit corridors Limit expansion of services in the fringe areas of the downtown Review strategies for paratransit services based on individual route ridership time and location profiles
	Conventional/ Community	<ul style="list-style-type: none"> Paratransit service may extend accessibility of transit Lower cost per ride than Option A Increase in annual services hours are significant (0.4 to 1.1 hours per capita) 		
	Paratransit			

In general, each scenario provides a four-fold increase in service levels over today. However, these services are allocated differently and would support the significant growth projected for Abbotsford. Based on the above quantitative and qualitative review, Concept A provides the least efficient allocation of services as the overall routing and structure of service remains unchanged with many indirect and looping routes through outlying neighbourhoods. As such, Concept A would attract the least growth in transit ridership compared to the other two concepts, resulting in the highest cost per ride. Concepts B and C however, would generate similar levels of transit ridership, but the allocation of services differs in that Concept C focuses attractive service levels on corridors that are forecast to be more productive. In other words, the structure of routes in Concept C is developed to provide more frequent and direct services to routes within the core areas of the City and better matches growth and development levels along those corridors. As such, Concept C provides a significant improvement over existing service levels at the lowest cost per ride.

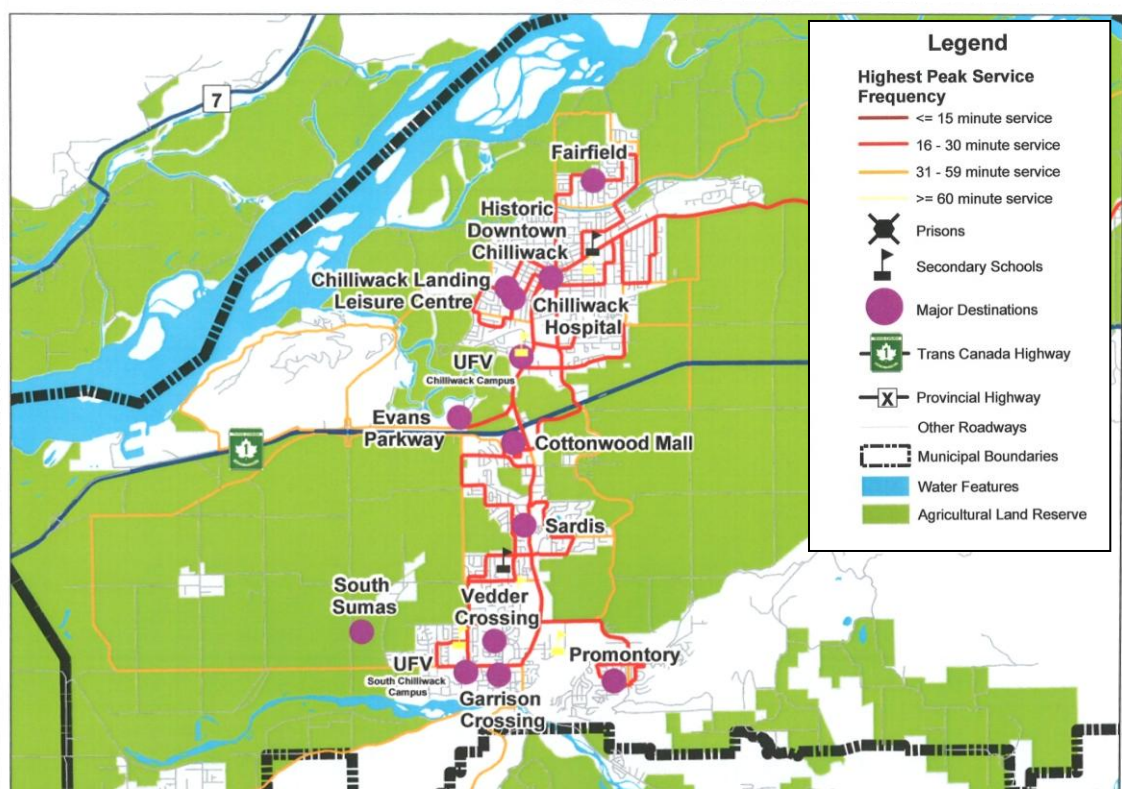
It should be recognized that the planned levels of service in Concept B and C would required a much greater level of development along the frequent transit and rapid transit corridors in Abbotsford for the long-term. Staff and other public stakeholders identified Concept C as the preferred long-term strategy with a commitment to coordinate land use patterns through ongoing planning work within the City.



2.3 Local Services in Chilliwack

The local travel market in Chilliwack represents a significant share of trips in the Fraser Valley region with its population and employment base. Travel is generally oriented north – south along the Vedder Road corridor with several key destinations including the Historic Downtown, Cottonwood Mall, University of the Fraser Valley, Chilliwack Leisure Landing Centre, Chilliwack General Hospital and others. Chilliwack's population is forecast to grow by 85% over the next 25 years with a corresponding significant increase in local travel. The current structure and levels of transit service does not meet the needs of the local travel market with key issues including the frequency, directness and type of service. Figure 2.8 below illustrates the structure and levels of peak period transit services that are currently provided in Chilliwack.

Figure 2.8 – Structure and Levels of Existing Transit Services in Chilliwack





Similar to that of Abbotsford, there is opportunity to capture a significant share of the local travel market with enhanced transit services that provide more frequent and more direct services to key activity nodes within the community. The following sub-sections describe the preliminary concepts and provide a comparative assessment in both quantitative and qualitative terms as part of the preliminary screening process.

2.3.1 Preliminary Concepts

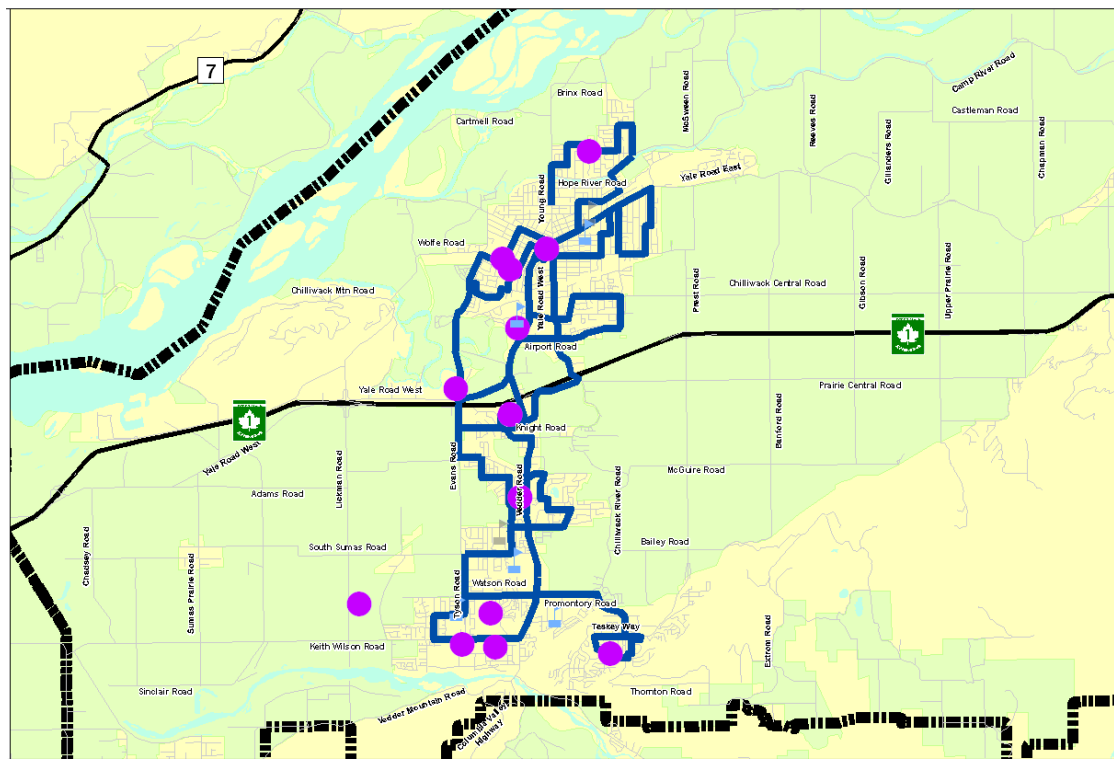
There three distinct local transit service concepts where developed for Chilliwack: (1) Intensifying Existing Services, (2) Hierarchy of Services Concept 1, and (3) Hierarchy of Services Concept 2. The proposed changes are designed to address some of the key issues with current services as previously described in an effort to attract greater transit ridership in Chilliwack. The three distinct concepts for local transit services within Chilliwack are described as follows:

a. Intensify Existing Services in Chilliwack

The first concept (illustrated below in Figure 2.9) for enhanced local services in Chilliwack is to simply increase the frequency of existing transit routes to a level where most routes operate at a 15-minute or better frequency throughout most of the day. There are some benefits to this approach, namely that existing customers are familiar with the current routing structure and would receive better service levels overall. This concept, however, does not address some of the key challenges mentioned earlier including the directness of service and the overall efficiency and cost recovery of the system. At a high level, this approach provides only a marginal increase in service levels with a significant increase in operating, facility and debt servicing costs.



Figure 2.9 – Intensifying Existing Local Services in Chilliwack



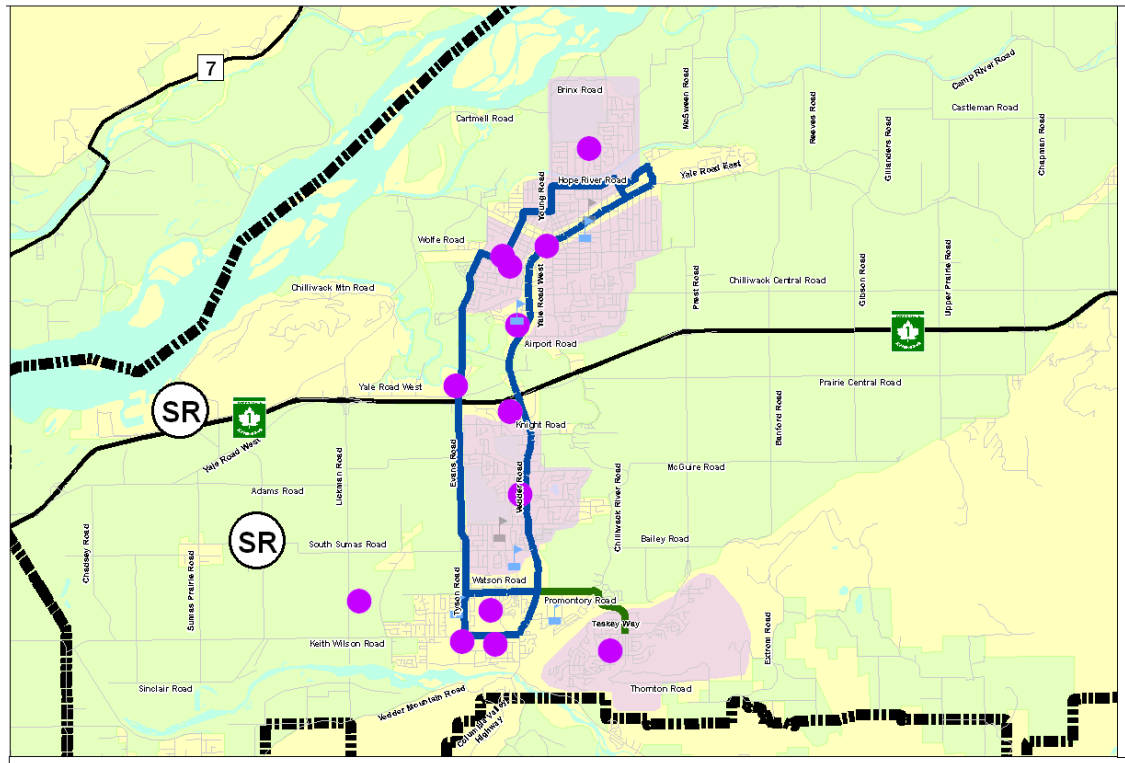
b. Hierarchy of Services Concept 1

The second concept illustrated below in Figure 2.10 includes the restructuring and significant expansion of services in Chilliwack such that they are better aligned with the local travel market. The Vedder/Yale Road as well as Evans Road would serve as the 'spines' to the transit system, providing direct north-south frequent transit services throughout the City between downtown area and UFV South Campus (15 minutes for 15 hours per day, 7 days per week). Each of these corridors is within a 400 metre walking distance of most core area neighbourhoods and land uses on either side. Neighbourhood buses would provide services within lower density areas of the City to all major generators on a fixed or flexible basis and connect with the frequent transit corridors. Some of the very low density and outlying areas could utilize transcab or commuter subscription-type services that are more suited rural areas of Chilliwack.

Overall, this concept would promote increased scale, mixture and density of land uses along the Frequent Transit corridors to ensure effective use of resources and to increase transit ridership.



Figure 2.10 – Hierarchy of Services Concept 1 in Chilliwack

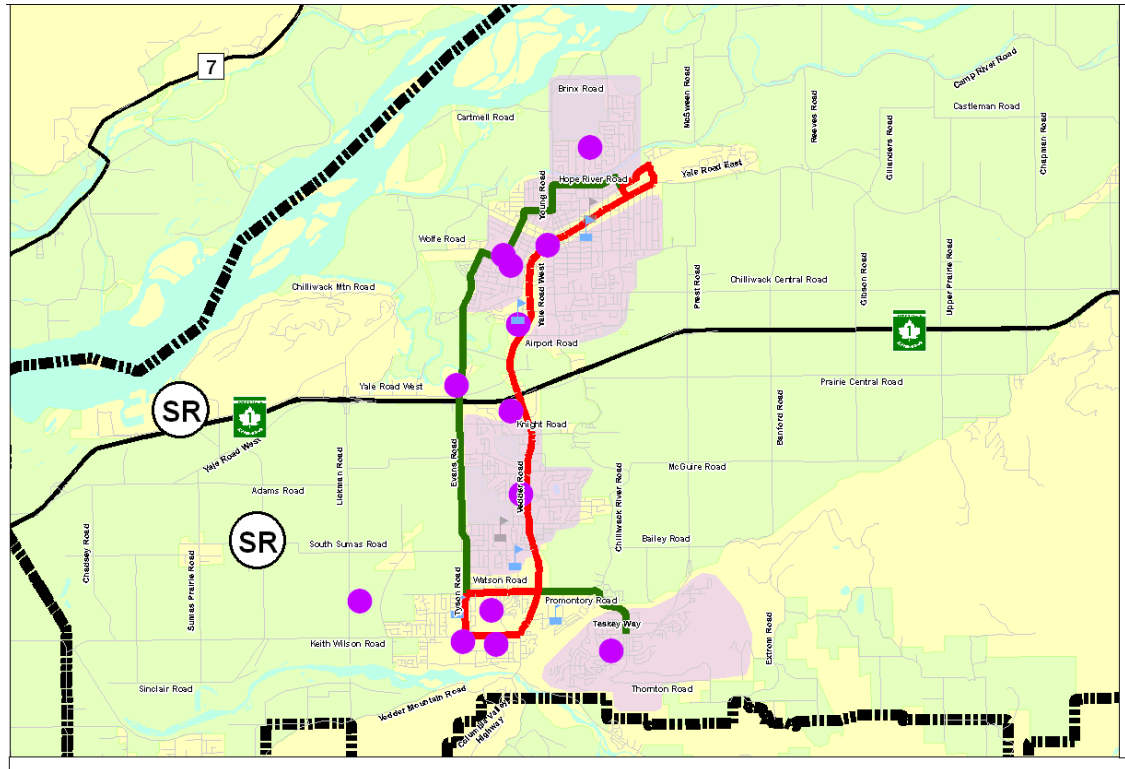


c. Hierarchy of Services Concept 2

The final long-term concept for local services in Chilliwack includes further refinement to the route structure from the previous concept. The main change would be to reallocate services so that a Bus Rapid Transit services in a transit priority facility (such as a bus only lane) is provided along the Vedder Road and Yale Road corridor between Downtown Chilliwack and UFV South Campus. With significantly more development nearby this corridor as well as the provision of a high frequency, limited stop service including possible transit priority measures, ridership would need to be developed to levels that would see substantial two-way travel throughout the day. Furthermore, with such high service levels to key destinations, more people with choices would likely begin using transit services as an alternative to driving. Rather than providing frequent transit service on Evans Road, local service levels would continue to provide a north-south connection along a less developed corridor. Neighbourhood shuttle services would be provided in the low density areas of the City to support getting to key nodes within the community and to connect with the more frequent and direct transit corridors as previously described. Figure 2.11 illustrates the structure of services for the third concept.



Figure 2.11 – Hierarchy of Services Concept 2 in Chilliwack



2.3.2 Preliminary Screening & Evaluation

This section provides a high order screening and evaluation of the three local service concepts for Chilliwack. The following table provides a summary of the quantitative features of each future service option compared to today's levels.



Table 2.4 – Quantitative Features of Future Local Service Options in Chilliwack

Corridor Connections	Peak Frequency (min)	2031 Daily Boarding (# psgrs)	2031 Transit Mode Share	Fleet (# buses)	Annual Service Hours	2031 Service Hours per Capita	Annual Vehicle & Operating Cost (\$ mil 2031)	Cost / Ride (2031)
TODAY	30-60	1,500	0.8%	6	21,400	0.3	\$2.9	\$6.45
A. Intensify Existing Services Frequent Transit	10-15	3,000	1.0%	30	159,000	1.1	\$20.1	\$22.30
B. Hierarchy of Services (1) Frequent Transit Conventional/Community Paratransit	10-30	9,000	2.0%	20	125,000	0.9	\$16.1	\$5.95
C. Hierarchy of Services (2) Rapid Transit Conventional/Community Paratransit	5-30	9,900	2.5%	20	112,000	0.8	\$15.3	\$5.15

Each of these concepts provides a significant increase in the amount of local transit services that would be delivered within Chilliwack. Recognizing that the services hours per capita in Chilliwack is the lowest of all communities, all concepts include a six to seven-fold increase in service hours over the current situation respectively. Where and how these services are allocated however, differ significantly. Concept A provides the least efficient allocation of services as the overall routing and structure of service remains unchanged with many indirect and looping routes through outlying neighbourhoods. As such, Concept A attracts the least amount of ridership compared to the other two future scenarios and the highest cost per ride. Concepts B and C generally are projected to attract similar levels of ridership and provide similar hours of service, but the allocation of services differs in that Concept C provides a higher service level to the Yale Road and Vedder Road corridor. In other words, the structure of routes in Concept C is developed to provide more frequent and direct services to corridors that are anticipated to generate the highest ridership. As such, Concept C provides a significant benefit over existing service levels at the lowest cost per ride.

Table 2.5 below summarizes the strengths, weaknesses and opportunities for each of the local service Concepts in Chilliwack.



Table 2.5 – Qualitative Summary of Chilliwack Service Concepts

Corridor Connections	Type of Service	Strengths	Weaknesses	Opportunities
A. Intensify Existing Services	Frequent Transit	<ul style="list-style-type: none"> Significantly enhanced frequencies on existing routes Maintains today's level of coverage Support existing transit travel markets with enhanced services 	<ul style="list-style-type: none"> Does not address indirect routing of existing services Provides frequent service to low density areas Marginal increase in ridership Significant increase in cost Not cost effective (\$22.30/ride) 	<ul style="list-style-type: none"> Refine routing and limit provision of frequent services to a select number of routes
	Conventional/Community	<ul style="list-style-type: none"> Frequent transit network provides more direct routing Majority of residents within 400m of frequent transit service 	<ul style="list-style-type: none"> Will produce more transfers between lower density growth areas and core generators. Broader range of vehicles to maintain and arrange spares 	<ul style="list-style-type: none"> Requires increased scale of development and densities along frequent transit corridors
	Paratransit	<ul style="list-style-type: none"> Paratransit services provide coverage within low density areas and extend accessibility of transit Lower cost per ride than Option A Ridership growth reasonable with a cost per ride of approximately \$5.95 	<ul style="list-style-type: none"> Insufficient densities along frequent transit corridors may limit success 	<ul style="list-style-type: none"> Limit expansion of services in some areas to maintain reasonable effectiveness Review strategies for flexible routing based on individual route ridership time and location profiles
C. Hierarchy of Services (2)	Rapid Transit	<ul style="list-style-type: none"> Rapid bus and conventional service corridors provide direct north-south services 	<ul style="list-style-type: none"> Will result in more transfers Broader range of vehicles 	<ul style="list-style-type: none"> Consider increases to densities nearby rapid transit network
	Conventional/Community	<ul style="list-style-type: none"> Most residents within 400m of direct, frequent transit service 	<ul style="list-style-type: none"> Insufficient scale and densities of land uses planned along rapid transit corridors to justify 5 minute service 	<ul style="list-style-type: none"> Limit expansion of services in some areas to maintain reasonable effectiveness
	Paratransit	<ul style="list-style-type: none"> Paratransit services provide coverage within low density areas Lower cost than Option A Ridership growth reasonable with a cost per ride of approximately \$5.15 		<ul style="list-style-type: none"> Review strategies for flexible routing based on individual route ridership time and location profiles

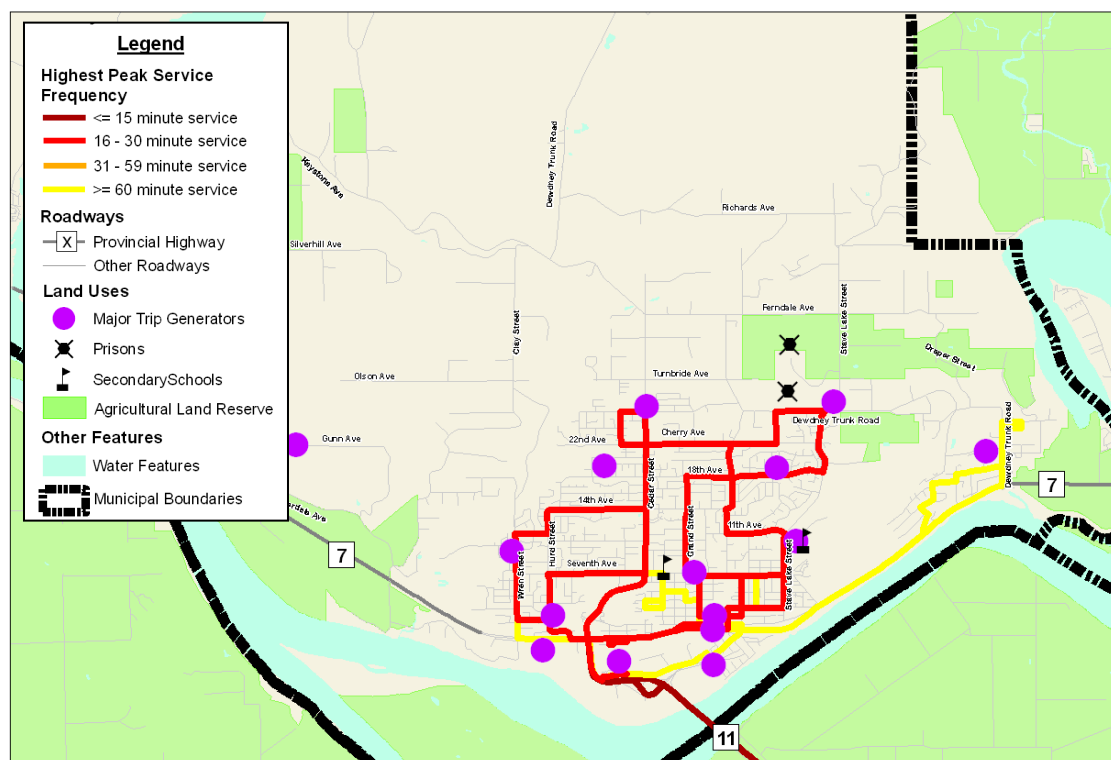
All three scenarios provide a significant increase over existing service levels with differences in the structure and the types of services that are offered. Concept A provides increased service levels but because the issues of routing and service types with the current system are not addressed, it does not capitalize on some of the opportunities that exist in the local travel market in Chilliwack. Concepts B and C are more directed at utilizing those opportunities by allocating services where they would be most effective. The routing structure and types of services in Concepts B and C focus on the corridors within Chilliwack where the density and mixture of planned land uses could be increased to support frequent and direct transit services. As such, Concept C provides very attractive service levels in the downtown core area of Chilliwack at a level high enough to attract choice riders to the transit system and developing two way ridership patterns throughout the day. Concept C is recommended for further review as part of the complete long-term strategy for the Fraser Valley.



2.4 Local Services in Mission

Out of the three urban areas in the Fraser Valley, the proportion of local trips in Mission is among the lowest in the Fraser Valley, but still represents almost 70% of all daily travel with key destinations including the downtown core, Mission Leisure Centre, Mission Memorial Hospital and the University of the Fraser Valley. The population of Mission is forecast to almost double over the next 20 years. Figure 2.12 illustrates the structure and levels of transit service that are currently available for local travel in Mission.

Figure 2.12 – Structure and Frequencies of Peak Local Services in Mission



As previously described, there are several key challenges to making transit an attractive alternative in Mission including the overall amount, frequency, directness and types of transit service. The following sub sections provide a description of the preliminary concepts that provide enhanced transit services in Mission as well as a synthesis of the screening and evaluation process used to assess the effectiveness of each concept.



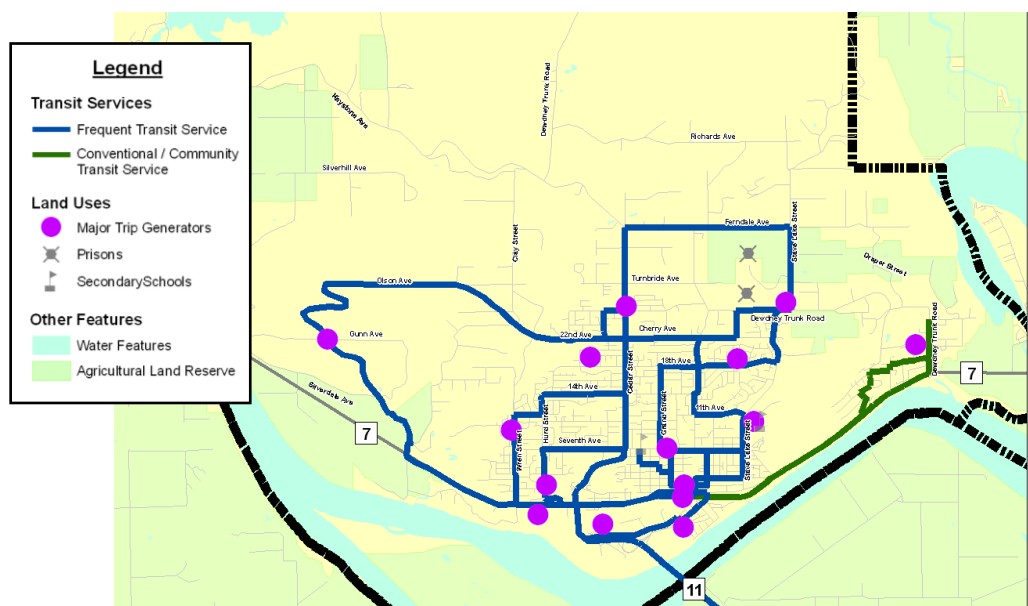
2.4.1 Preliminary Concepts

This section provides a description of the two general concepts for local transit services in Mission: (1) Intensifying Existing Services, and (2) Hierarchy of Services. The proposed changes help to address some of the key issues with current services as described earlier by aligning the most attractive services with the stronger potential markets for transit.

a. Intensify Existing Services in Mission

The first concept for enhanced local transit services in Mission illustrated in Figure 2.13 is designed to retain the existing routes and simply increase frequencies of service to a level where most routes operate at a 15-minute or better frequency throughout the day. This approach essentially provides a better level of service to the existing transit markets in the District in the long-term. This concept, however, does not address some of the key challenges mentioned earlier including the directness of service and the overall efficiency and cost recovery of the system. In general terms, additional services within the existing route structure would create significant increases in operating, facility and debt servicing costs without the dramatic increase in ridership and subsequently farebox revenues.

Figure 2.13 – Intensifying Existing Local Services in Mission

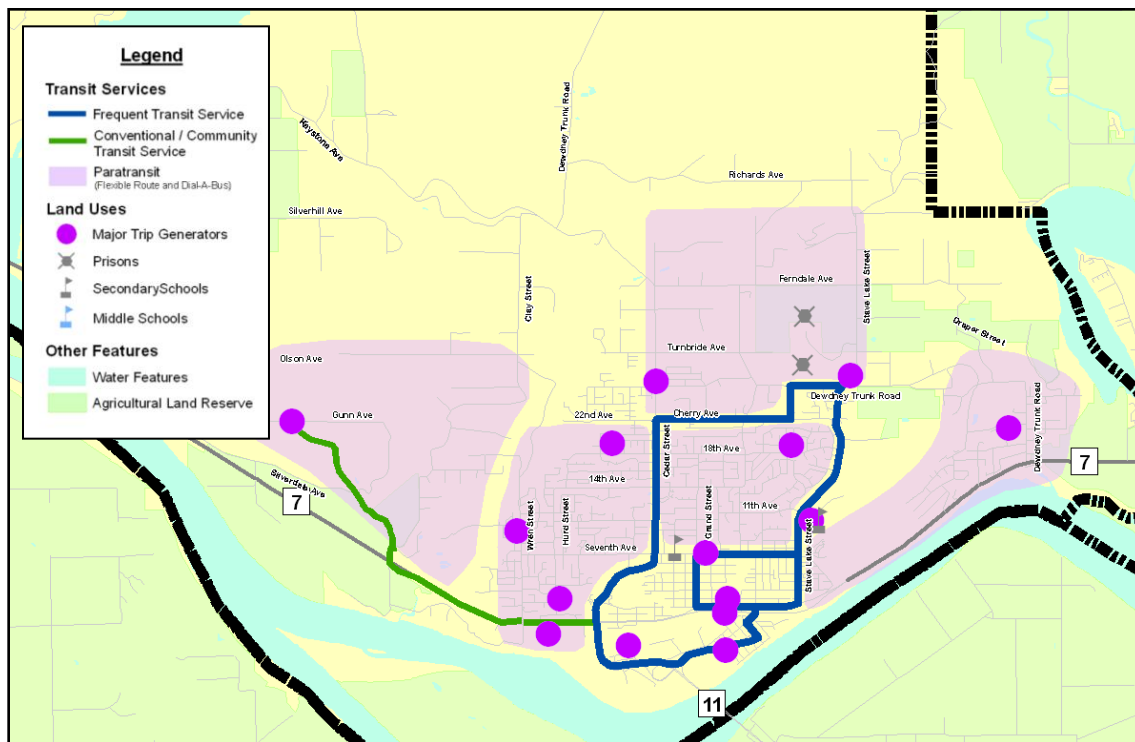




b. Hierarchy of Local Services in Mission

The second concept for enhancing local transit in Mission (see Figure 2.14 below) is to restructure the existing route system to increase the potential market share and to significantly expand services such that they are better aligned with the varied local travel markets that will exist in the long-term. The 'spine' of the transit system would serve the established and planned areas of growth and densification within Mission between primary corridors of Cedar St, 22nd Ave, Stave Lake St, 7th Ave and Highway 7 as well as the Bypass commercial and employment areas. Given the existing and planned levels of population and employment within 500 metres of these areas, a Frequent Transit service would be used to provide attractive, two-way all day services to these areas where most people would not require a bus schedule. All other local and regional services would tie into these main route corridors at key exchange facilities where passengers can efficiently transfer between routes. Community bussing services ranging from fixed route and schedule services through to more flexible and demand responsive services during some or all periods of the day could operate in the lower density residential areas of the District to provide a service that is responsive to local travel demand patterns and connects with the Frequent Transit service and other regional routes.

Figure 2.14 – Hierarchy of Local Services in Mission





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2.4.2 Preliminary Screening & Evaluation

This section provides a high order screening and evaluation of the two local service options for Mission. The following tables summarize the quantitative and qualitative features of each long-term concept for local services in Mission in comparison to today's conditions.

Table 2.6 – Quantitative Features of Future Local Service Options in Mission

Corridor Connections	Peak Frequency (min)	2031 Daily Boarding (# psgs)	2031 Transit Mode Share	Fleet (# buses)	Annual Service Hours	2031 Service Hours per Capita	Annual Vehicle & Operating Cost (\$ mil 2031)	Cost / Ride (2031)
TODAY	30-60	1,300	1.6%	6	13,000	0.4	\$2.0	\$5.10
A. Intensify Existing Services	10-15	2,500	1.6%	20	69,000	1.0	\$8.7	\$11.60
B. Hierarchy of Services	10-30	4,500	2.6%	16	75,000	1.1	\$9.7	\$7.20



Table 2.7 – Qualitative Features of Future Local Service Options in Mission

Corridor Connections	Type of Service	Strengths	Weaknesses	Opportunities
A. Intensify Existing Services	Frequent Transit	<ul style="list-style-type: none"> • Very attractive service frequencies • Maintains good coverage • Significantly enhanced service levels for current transit markets • Significant increase in service hours per capita (0.4 to 1.0 hours) 	<ul style="list-style-type: none"> • Maintains indirect services • Doesn't address existing issues/challenges • Marginal expansion of ridership • Significant increase in cost relative to demands • Not cost effective (\$7.50/ride) 	<ul style="list-style-type: none"> • Refine routing of frequent services to major roads only if deemed desirable option to work with
B. Hierarchy of Services	Frequent Transit Conventional/Community Paratransit	<ul style="list-style-type: none"> • Greatest increase in services concentrated in established areas • Majority of residents within 400m of frequent transit service • Paratransit services maintain similar levels of coverage and flexible service for low density areas • Paratransit service may extend accessibility of transit • Lower cost per ride than Option A • Significant increase in services per capita (0.4 to 1.2 hours) 	<ul style="list-style-type: none"> • Will result in transfers between lower density growth areas and core generators & frequent transit services. • Broader range of vehicles • Insufficient densities along some frequent transit corridors may limit success • Slightly higher than desired cost per ride projected (\$5.25) 	<ul style="list-style-type: none"> • Consider increases to densities nearby frequent transit network • Limit expansion of services in some areas to maintain reasonable effectiveness i.e Silverdale • Review strategies for paratransit services based on individual route ridership time and location profiles

Overall, both concepts provide over a five-fold increase in service hours as compared to today's levels with the main differences being how the services are allocated. The first concept simply provides higher frequencies on existing routes which generally makes transit more attractive for existing travel markets, but does not necessarily serve new markets of travel. Additionally, some of the previous issues including the directness and efficiency of services do not get addressed. The second concept customizes the services to local travel characteristics and provides high service levels in the most established and growing areas of the District where they would be most effective. Service frequencies on key corridors would be significantly higher to attract choice riders and promote two way travel. In planned growth areas in the north and western areas of Mission, lower density services such as neighbourhood transit services may include everything from a demand responsive service to the regional and local frequent transit network to serve the local travel needs within neighbourhoods. In this regard, Concept B provides a tailored approach to serving the various local transit markets and results in a higher level of effectiveness while serving many other goals for transit in Mission.



3.0 POSSIBLE DIRECTIONS FOR REGIONAL & INER-REGIONAL TRANSIT

This section provides a summary of the possible directions for regional and inter-regional transit services that provide connections between Fraser Valley communities as well as into other parts of Metro Vancouver. Unlike the local service concepts, many of the regional and inter-regional concepts are for services that do not exist today. Even though the regional and inter-regional travel markets are smaller compared to the local travel market, these new services are designed to provide travel choices to and from the markets of greatest potential between communities within the region and externally as described in *Foundation Paper #1 – Market Analysis*. These longer distance services bring the communities of the Fraser Valley and neighbouring Metro Vancouver closer together and provide access to major regional facilities such as the Abbotsford International Airport, Abbotsford Regional Hospital and key commercial, industrial and institutional activity centres.

The following sections describe the development and screening process, highlight some of the common challenges and opportunities, as well as described and evaluate the regional and inter-regional transit concepts considered in the long-term strategy.

3.1 The Development & Screening Process

The development and screening process for regional and inter-regional services was very similar to the process for local services described in Section 2.0. In general, the market assessment of Foundation Paper #1 identified the primary regional and inter-regional connections in which to provide transit service as an attractive alternative to driving. Growth and development patterns and a regional travel model were both used to forecast long-term transit ridership if an attractive service level was provided between the regional connections. Once the forecast peak and daily ridership were determined, service features such as route connections, frequency and vehicle types were defined according to the travel market in order to examine the viability of the service and compare with other regional connections. The preliminary effectiveness of each concept is examined in terms of economic effectiveness as well as more qualitative considerations to support the overall goals and objectives for transit in the Fraser Valley.



3.2 Common Challenges & Opportunities

Similar to the local transit services, regional services and inter-regional services in the Fraser Valley are very limited as explored in Foundation Paper #1. The most attractive service exists between Mission and Abbotsford referred to as the Valley Connector. The only other regional service connecting communities in the Fraser Valley is between Agassiz/Harrison and Chilliwack. Although there are some inter-regional services between the Fraser Valley and Metro Vancouver – TrainBus to Mission Station and service between Aldergrove and Abbotsford – transit is generally not seen as an attractive choice for the significant travel markets. Figures 3.1 and 3.2 illustrate the regional and inter-regional travel markets respectively in which transit concepts are examined.

Figure 3.1 – Regional Travel Patterns within the Fraser Valley

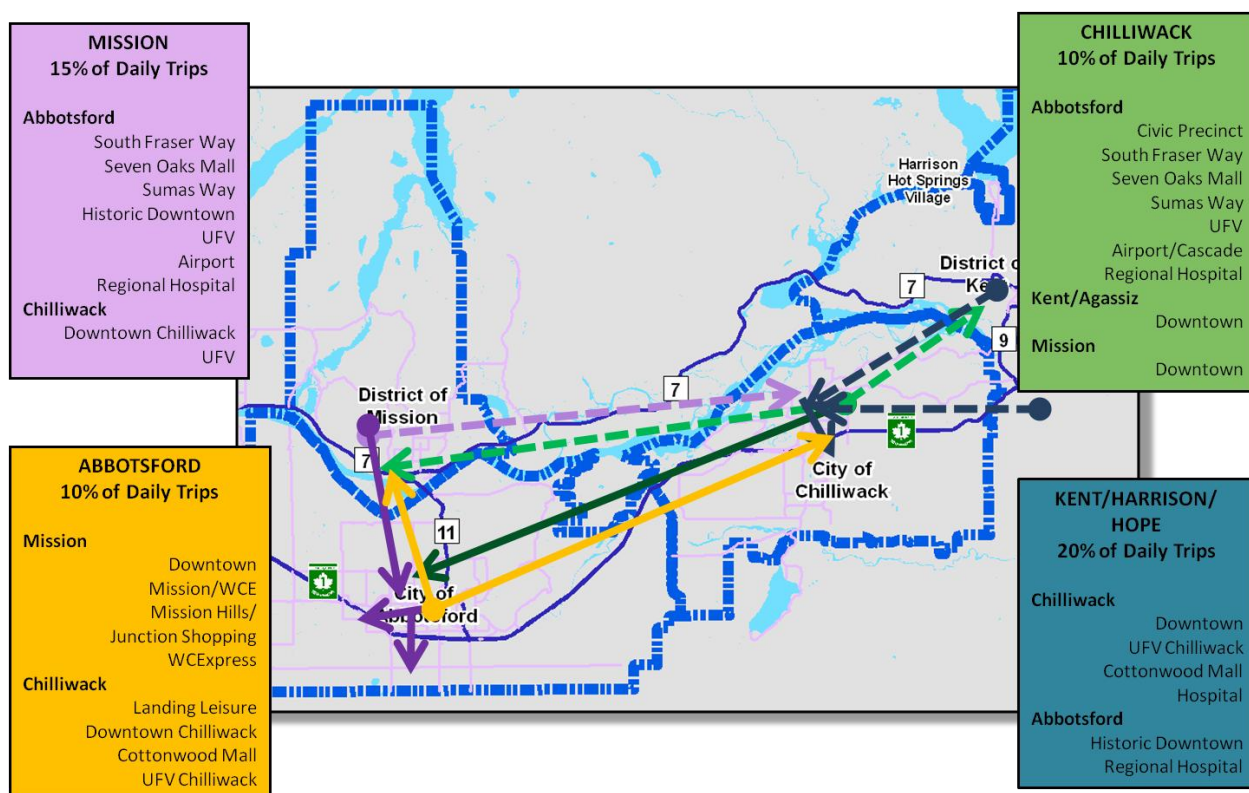
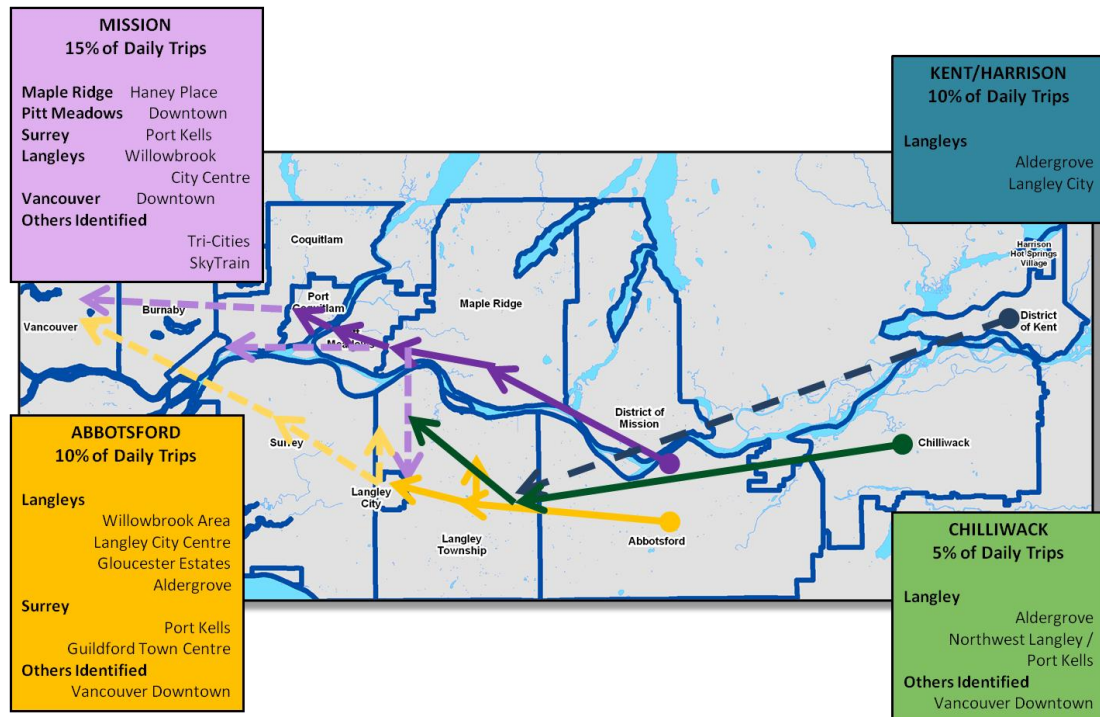




Figure 3.2 – Inter-Regional Travel Patterns



As noted, regional and inter-regional travel markets comprise approximately 20% of all trips generated by Fraser Valley communities. The other 80% of the trips generated to and from Fraser Valley communities start and end in the same community. Overall, the significant markets include connections from Abbotsford and Mission to Langley and Maple Ridge respectively with further limited connections to destinations within Metro Vancouver such as Surrey, Northeast Sector, Vancouver and Burnaby/New Westminster. The potential travel markets described in Foundation Paper #1 were determined based on recent data such as travel surveys, Census Journey to Work, market research and use of the regional transportation model.

The following two sections provide a description of the possible regional and inter-regional bus services including an assessment and evaluation of each concept. Finally, section 3.5 provides an assessment of possible urban rail services using the existing Inter-Urban Line corridor between Surrey and Chilliwack or by extending the West Coast Express to Abbotsford. **The intent of this review was principally to provide a comparative analysis of rail and bus services in order to determine if a commuter rail service between south of Fraser River communities would be a viable market between Chilliwack, Abbotsford and Metro Vancouver over the next 20 years or so.**



3.3 Preliminary Regional Service Concepts

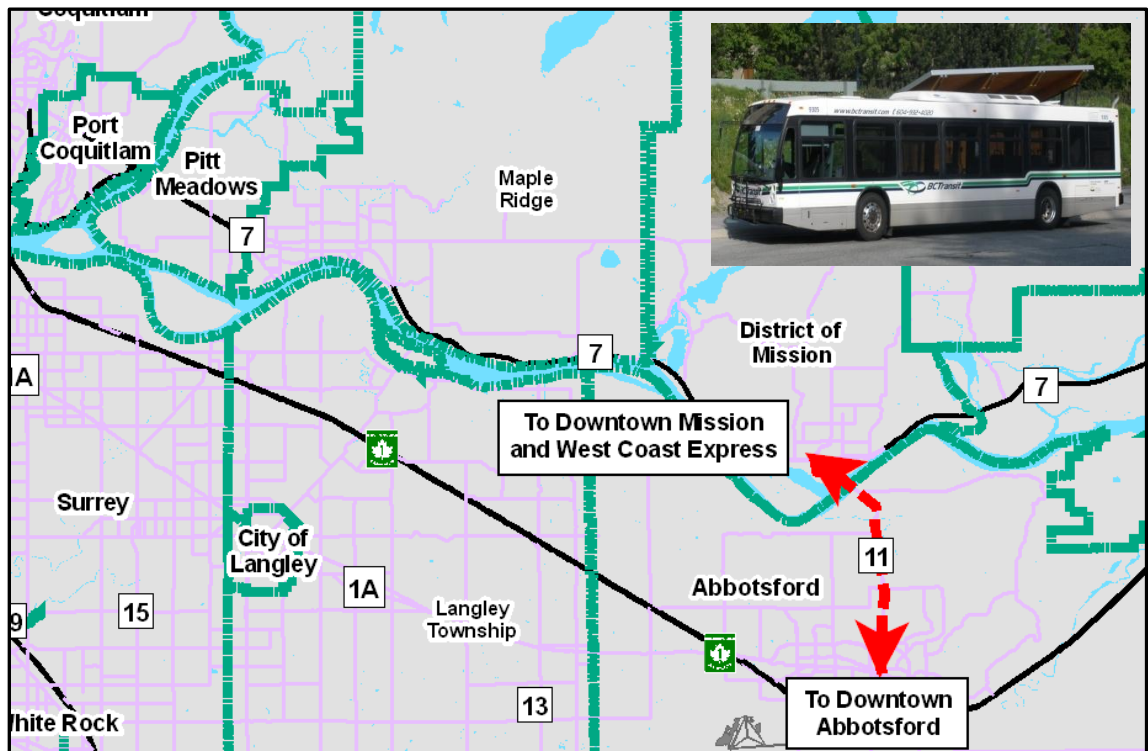
This section provides an assessment of each regional service concept including a description of the service, forecast 2031 travel markets served as well as features of the service that should ultimately be considered.

3.3.1 Highway 11 – Abbotsford-Mission

The Highway 11 corridor between Abbotsford and Mission is currently served by the Route 31 Valley Connector route with 15-minute peak service. This route carries approximately 800 daily passengers and is the fourth busiest route in the ValleyMAX system. The next 20 years of growth in both communities will also result in increasing demands for travel and create the need for more attractive transit service. In the long-term, several enhancements could be provided to this service including higher frequencies and transit accommodation facilities that support more reliable travel times. Figure 3.3 illustrates the location of this service.



Figure 3.3 – Possible Regional Connection between Abbotsford and Mission





The following table provides a summary of the key long-term features of this regional service concept.

Table 3.1 – Key Features of Highway 11 Abbotsford-Mission Regional Service

<p>Markets Served:</p> <ul style="list-style-type: none"> • <i>Earlier morning service connections with WCE.</i> • <i>For Mission residents, the most significant generators in the City of Abbotsford include: South Fraser Way area, Civic Precinct, Seven Oaks Mall, Sumas Way shopping area, Historic downtown, regional hospital, UFV and the Airport.</i> • <i>For Abbotsford residents, the most significant generators in the District of Mission area include: downtown Mission; West Coast Express; and Mission Hills Mall.</i>
<p>Premium Service Features to Consider:</p> <ul style="list-style-type: none"> • <i>Express bus service</i> • <i>10 min peak and 20 min off-peak frequencies (from 15 and 30 min today)</i> • <i>Attractive evening and weekend service levels (30 min)</i>
<p>Support Services & Facilities</p> <ul style="list-style-type: none"> • <i>Transit priority treatments at major intersections</i> • <i>Integration with other local and regional services provided in Mission and Abbotsford</i>

3.3.2 Highway 1 – Abbotsford-Chilliwack

Other than very limited Greyhound services that could potentially be discontinued, there is currently no transit service between Abbotsford and Chilliwack, yet the travel markets between both communities are growing. These are the two largest communities within the Fraser Valley Region by a significant margin and share a relatively large regional travel market. The potential to attract regional ridership is great given the size of the travel market and the number of key destinations within each community. Figure 3.4 below illustrates the alignment of this regional connection between Abbotsford and Chilliwack central areas. Within Chilliwack, the service would connect to the Cottonwood Shopping Centre and downtown areas as well as with other local transit services. In Abbotsford, the service would likely connect to attractive services around the McCallum interchange and possibly into the Bourquin exchange. In both cases, a regional service would also connect to attractive local transit services described in Section 2.0.



Figure 3.4 – Possible Regional Connection between Abbotsford and Chilliwack

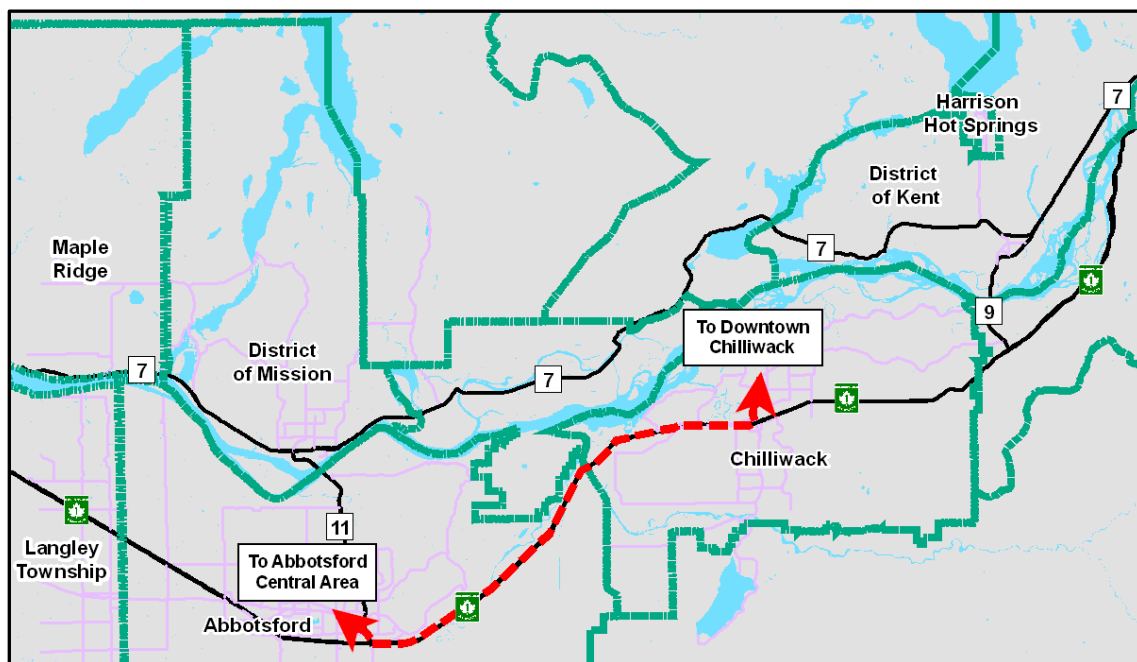


Table 3.2 below summarizes the key features of this regional bus service concept.

Table 3.2- Key Features of Highway 1 Abbotsford-Chilliwack Regional Service

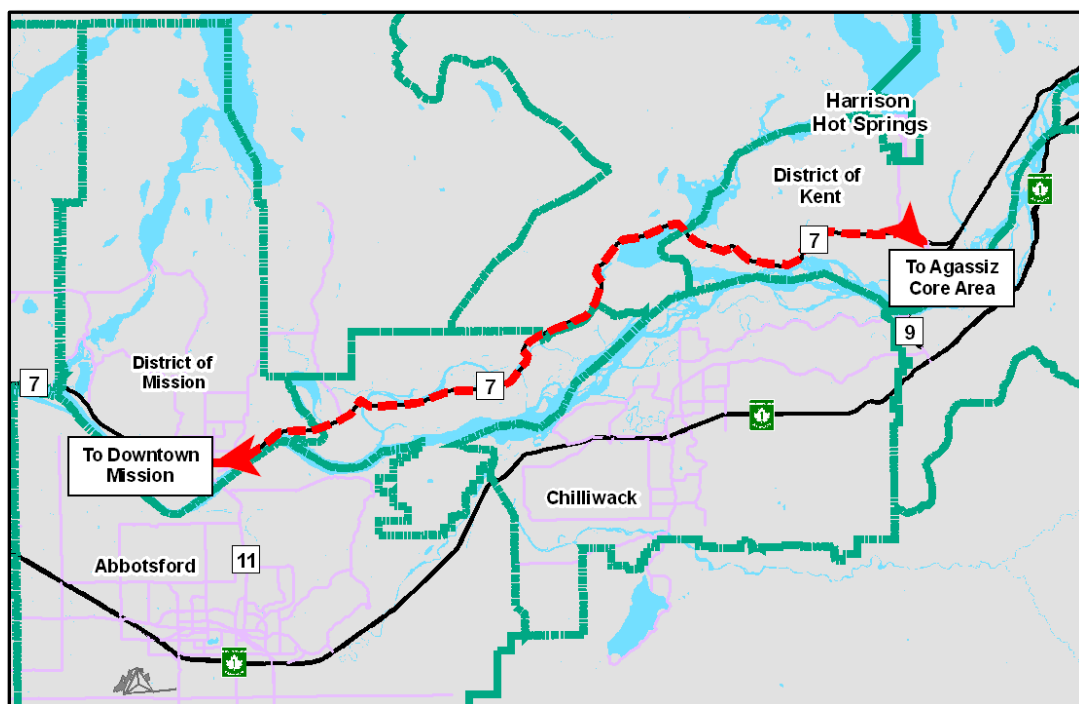
<p>Markets Served:</p> <ul style="list-style-type: none"> Primarily serving travel between Abbotsford and Chilliwack which accounts for <5% of all daily trips from each community. For Chilliwack residents, the most significant generators in the City of Abbotsford include: South Fraser Way area; Civic Precinct; UFV; Seven Oaks Mall; Airport; Cascade; and the Regional Hospital. For Abbotsford residents, the most significant generators in the Chilliwack area include: Leisure Landing; downtown Chilliwack; Cottonwood Mall; and UFV.
<p>Premium Service Features to Consider:</p> <ul style="list-style-type: none"> Express coach bus service between downtown Abbotsford and Chilliwack 30 min peak and 60 min off-peak frequencies Evening and weekend services (60 min)
<p>Support Services & Facilities</p> <ul style="list-style-type: none"> Enhanced passenger facilities at key transfer locations



3.3.3 Highway 7 – Mission-Agassiz

Today, there is no transit service along Highway 7 between Mission and Agassiz. The travel market between these two destinations is limited, however there are intermediate activity nodes and planned development that could benefit from this regional transit services. Figure 3.5 illustrates the alignment of this regional service concept between Mission and Agassiz.

Figure 3.5 – Possible Regional Connection between Mission and Agassiz



Given the limited travel market and the long distances between these communities, the potential to attract ridership is quite limited. The following table summarizes of the key features of this regional service concept.



Table 3.3 – Key Features of Highway 7 Mission-Agassiz Regional Service

Markets Served:

- *West Cost Express connection*
- *Direct connection between Mission and Agassiz/Kent*
- *Transfers to Harrison*
- *Intermediate connections to Mount Woodside, Harrison Landing, Harrison Mills and the eastern areas of Mission*
- *Indirect service to Western Kent Prison Complex and Rimex Manufacturing*

Premium Service Features to Consider:

- *Community shuttle service between Agassiz and WCE*
- *1 trip per day/direction*

3.3.4 Highway 9 – Chilliwack-Agassiz

There is currently regional transit service between Chilliwack and Agassiz provided by Route #11 – Agassiz-Harrison. Over the past ten years or so, this service has provided five two-way trips per day with approximately 100 daily passengers. The primary purpose of this service is to connect Agassiz with Popkum, Bridal Falls Rosedale and downtown Chilliwack. Figure 3.6 illustrates the alignment of this regional connection between Agassiz and Chilliwack.



Figure 3.6– Possible Regional Connection between Chilliwack and Agassiz

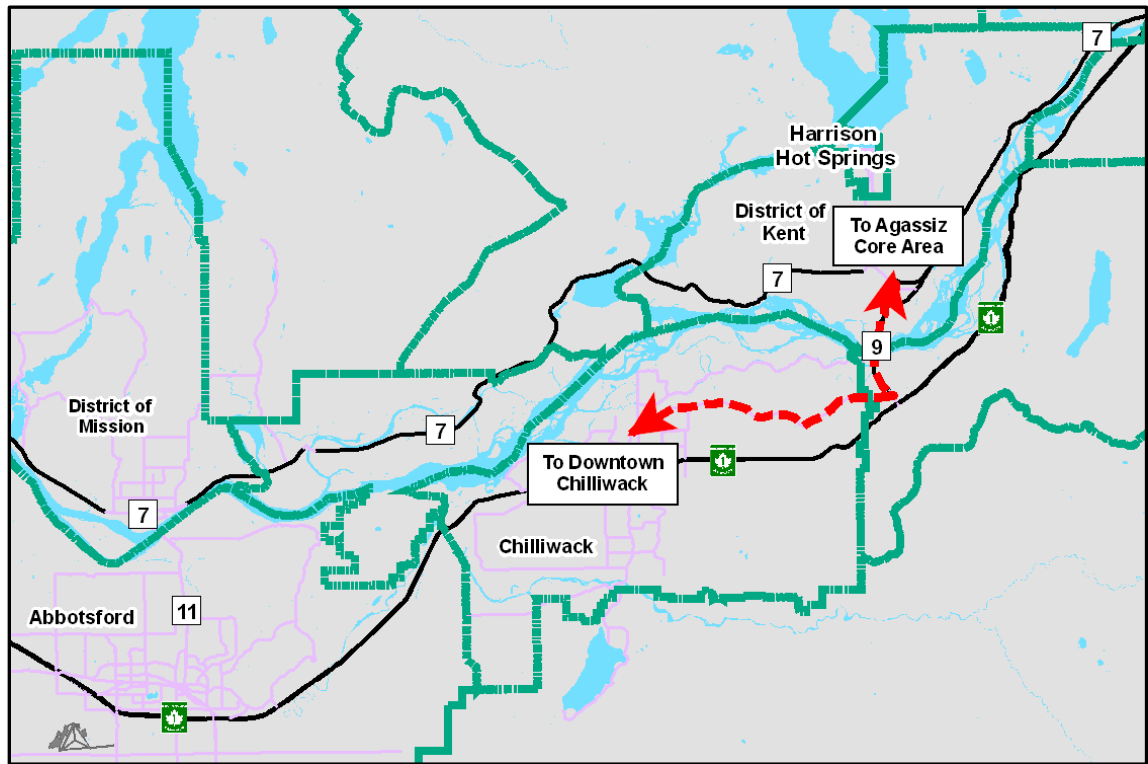




Table 3.4 below summarizes the service characteristics examined as part of this regional concept.

Table 3.4— Key Features of Highway 1 Abbotsford-Chilliwack Regional Service

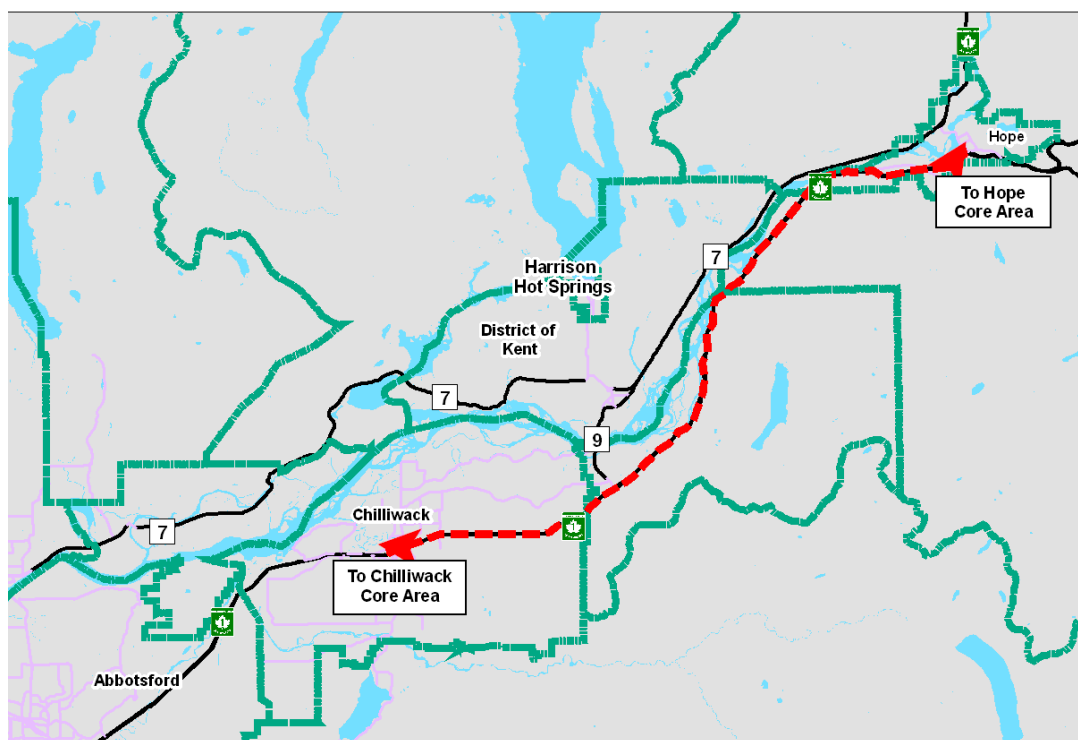
<p>Markets Served:</p> <ul style="list-style-type: none"> • <i>Supports to growing transit travel within Agassiz/Kent area</i> • <i>Services increased travel primarily from Agassiz, Kent and Harrison area to Chilliwack</i> • <i>The most significant generators in Chilliwack include: the downtown, UFV, Cottonwood Mall and the hospital</i>
<p>Premium Service Features to Consider:</p> <ul style="list-style-type: none"> • <i>Enhance existing express bus services between Agassiz – Chilliwack</i> • <i>Daytime frequency of 60 min during weekdays and weekends as well as early evening 120 minute service (in comparison to 120 minutes today)</i> • <i>Potential connections to local transit in Chilliwack from downtown</i>
<p>Support Services & Facilities</p> <ul style="list-style-type: none"> • <i>Passenger facilities at key stops</i> • <i>Additional stops in Agassiz</i>

3.3.5 Highway 1 – Hope-Chilliwack

There is currently no public transit service between Chilliwack and Hope. Although Greyhound provides an inter-city service through Hope, there is some uncertainty about longer term availability. Although the travel market is not that extensive, residents of Hope and staff have expressed an interest in exploring better access to regional services such as medical facilities and other community services, shops and amenities within Chilliwack. This limited period service would connect residents of Hope with the Cottonwood Mall and downtown areas of Chilliwack, as well as other local transit service. Figure 3.7 highlights the alignment of this regional service concept along the Highway 1 corridor.



Figure 3.7 – Possible Regional Connection between Hope and Chilliwack



The following table summarizes the key features of this regional service concept.

Table 3.5 – Key Features of Highway 1 Abbotsford-Chilliwack Regional Service

<p>Markets Served:</p> <ul style="list-style-type: none"> • Provides modest internal service along Old Hope Princeton Way • Serves growing market for regional travel for services in Chilliwack • The most significant generators in Chilliwack include: the downtown, UFV, Cottonwood Mall and the hospital
<p>Premium Service Features to Consider:</p> <ul style="list-style-type: none"> • Express coach bus service between downtown Hope and Cottonwood Mall in Chilliwack • Limited 120 min weekday and weekend service • Potential connections to attractive local transit services
<p>Support Services & Facilities</p> <ul style="list-style-type: none"> • Small scale park-and-ride facility within Hope



3.3.6 Summary of Regional Service Concepts

Each of the regional service concepts are evaluated and compared based on both quantitative and qualitative measures that are aligned with the goals and objectives of the Strategy. Table 3.6 below summarizes the economic evaluation of each regional service concept previously described.

Table 3.6 – Economic Evaluation of Regional Service Concepts

Corridor Connection	Type of Vehicle	Route Length	Peak Transit Travel Time	2031 Daily Boards	Peak Frequency (off-peak)	Annual Service Hours	Ann Op & Veh Cost	Ann Cap Cost	Cost/ Ride (\$)	Cost/ Serv Hour
Units		(km)	(min)	(#psgr)	(min)	(hours)	(mil 2031)	(mil 2031)	(2031 \$)	(2031 \$)
Highway 11 <i>Mission–Abbotsford</i>	Express Bus	12	20	1,800	10 (20)	18,300	\$2.5	\$0.1	\$4.80	\$140
Highway 1 <i>Abbotsford–Chilliwack</i>	Express Coach Bus	30	30	800	30 (60)	7,600	\$1.0	\$0.1	\$4.30	\$135
Highway 7 <i>Mission–Agassiz</i>	Com. Shuttle	50	50	20	2 trips per day	1,400	\$0.3	-	\$22.90	\$190
Highway 9 <i>Chilliwack–Agassiz</i>	Express Bus	25	25	250	60 (60-120)	7,300	\$0.7	<\$0.1	\$10.10	\$105
Highway 1 <i>Hope–Chilliwack</i>	Express Bus	55	45	100	120 (none)	4,200	\$0.6	<\$0.1	\$20.40	\$145

Generally, most regional services come at a premium compared to local services because of the longer travel distances without the corresponding increases in ridership. In other words, regional services will generally experience higher operating costs and cost per ride. Service levels for each concept were determined based on the potential to attract ridership and the need to balance costs. In this regard, the Highway 11 service between Abbotsford and Mission has the highest ridership potential and is provided the highest number of service hours, while the Highway 7 service between Mission and Agassiz is much lower.

Overall, the Mission-Abbotsford and Chilliwack-Abbotsford service provides the greatest number of service hours and is projected to have the best economic performance in terms of cost per ride (\$4.30 - \$4.80). At the other end of the spectrum, regional services between Hope and Chilliwack as well as Mission and Agassiz would come at a significant cost per ride and likely require a premium transit fare from customers to support the service. Given the high operating cost and low projected ridership to



provide these services, they are not viable conventional services without a significant transit subsidy. Alternatively, subscription services such as vanpool programs as well as other methods of delivery may be explored in an effort to reduce the program costs in order to meet the travel demands.

Table 3.7 provides a qualitative description of the strengths, weaknesses and opportunities for each regional service concept.



Table 3.7 – Qualitative Summary of Regional Service Concepts

Corridor Connections	Type of Service	Strengths	Weaknesses	Opportunities
Highway 11 Abbotsford – Mission	Express Coach Bus	<ul style="list-style-type: none"> Enhances frequency of existing services Serves a significant & growing 'regional' transit market Provision of early morning service to WCE Attractive levels of ridership (\$4.80/ride) 		<ul style="list-style-type: none"> Transit priority treatments at key intersections Attractive connections with local services in Mission & Abbotsford
Highway 1 Abbotsford-Chilliwack	Express Coach Bus	<ul style="list-style-type: none"> New direct regional service Supports access to essential services Serves downtown areas and other markets such as UFV Modest service levels service levels and ridership (\$4.30/ride) Evening and weekend service supported 	<ul style="list-style-type: none"> Market would be limited to 'captive' riders 	<ul style="list-style-type: none"> Attractive connections to other local services in Chilliwack & Abbotsford
Highway 7 Mission – Agassiz	Com. Shuttle	<ul style="list-style-type: none"> Enhance access to WCE between Mission from Agassiz Operates along main highway with request stops Serves some new growth areas along Hwy 7 	<ul style="list-style-type: none"> Limited ridership transit markets High cost longer distance service with fairly low ridership projected (\$22.90 / ride) 	<ul style="list-style-type: none"> Consider private sector operator or commuter vanpool
Hwy 9 – Yale Rd Chilliwack–Agassiz	Bus Service	<ul style="list-style-type: none"> Enhance existing service with 60 minute frequency Supports growing transit demands Addresses some overcrowding during peak periods in Agassiz Modest increase in ridership and long-term cost (\$10.10) 	<ul style="list-style-type: none"> Modest frequency will primarily attract 'captive' transit markets 	<ul style="list-style-type: none"> Continue to build the ridership by adding select stops at key locations south side of Agassiz and east of Chilliwack
Highway 1 Hope – Chilliwack	Bus Service	<ul style="list-style-type: none"> Provides access to essential services Supports aging and people with disabilities within community by providing mobility choices 	<ul style="list-style-type: none"> Limited service restricts potential demands Relatively high cost long-distance service for the projected ridership (\$20.40/ ride) 	<ul style="list-style-type: none"> Examine other community needs to design service Consider alternative delivery models for subscription or other private services providers



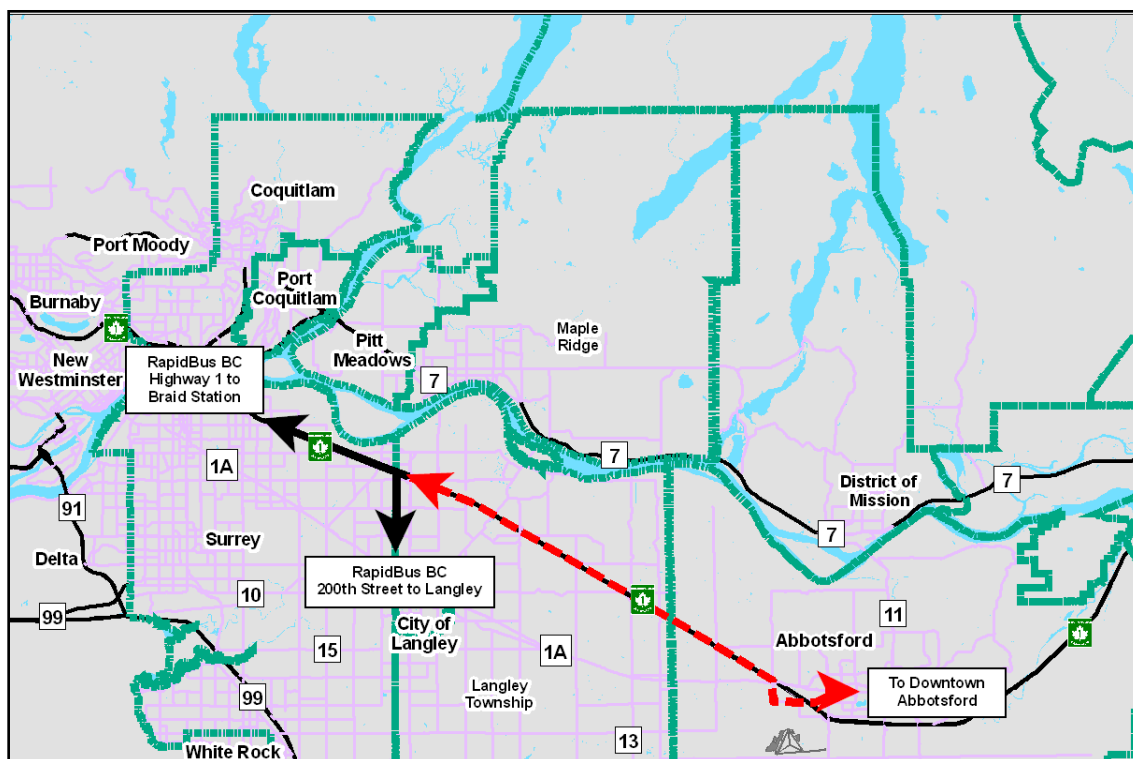
3.4 Preliminary Inter-regional Service Concepts

This section describes each of the inter-regional service concepts examined within the Strategy and provides a quantitative and qualitative evaluation. The economic evaluation of each concept includes an assessment of the forecast costs and ridership with a service designed to support the anticipated markets.

3.4.1 Highway 1 – Abbotsford-North Surrey

This service concept would provide a transit service between Abbotsford and Metro Vancouver, with direct connections to the planned RapidBus BC services along the Highway 1 corridor through to the Millennium SkyTrain, as well as on 200th Street to Langley City. RapidBus BC would operate in dedicated lanes providing frequent, fast and reliable service along Highway and across the Port Mann Bridge to the Millennium SkyTrain Line. Figure 3.8 below highlights the alignment of this service concept.

Figure 3.8 – Possible Highway 1 Connection between Abbotsford and North Surrey



Given the size of Abbotsford and the forecast 2031 travel markets between these key destinations, this service could support two-way trip making between Abbotsford and Metro Vancouver and provide



attractive connections to those other regional services previously described. Additionally, this service could likely support premium fares and could certainly be operated as a premium service such as TrainBus from Mission to downtown Vancouver or other similar long-distance services. The following table provides a description of the key markets served, the service features and support services and facilities for this concept.

Table 3.8 – Key Features of Highway 1 Abbotsford-North Surrey Inter-Regional Service

<p>Markets Served:</p> <ul style="list-style-type: none"> • <i>Central Area of Abbotsford (frequent transit & rapid bus services)</i> • <i>Abbotsford International Airport,</i> • <i>Potentially connects with and serves other Fraser Valley communities</i> • <i>Gloucester Estates Industrial area;</i> • <i>North Langley and Surrey industrial;</i> • <i>Transfer trips with other rapid transit services to Langley City & RapidBus BC to Braid Station</i>
<p>Premium Service Features to Consider:</p> <ul style="list-style-type: none"> • <i>New express Coach Bus from downtown Abbotsford to 200th Street on Highway 1</i> • <i>10 min peak and 20 min off-peak frequencies</i> • <i>Evening and weekend services</i>
<p>Support Services & Facilities</p> <ul style="list-style-type: none"> • <i>Dedicated shoulder bus lanes along Highway 1</i> • <i>Stops/Park-and-ride facilities at key interchanges</i> • <i>Transit exchanges at key interchanges</i>

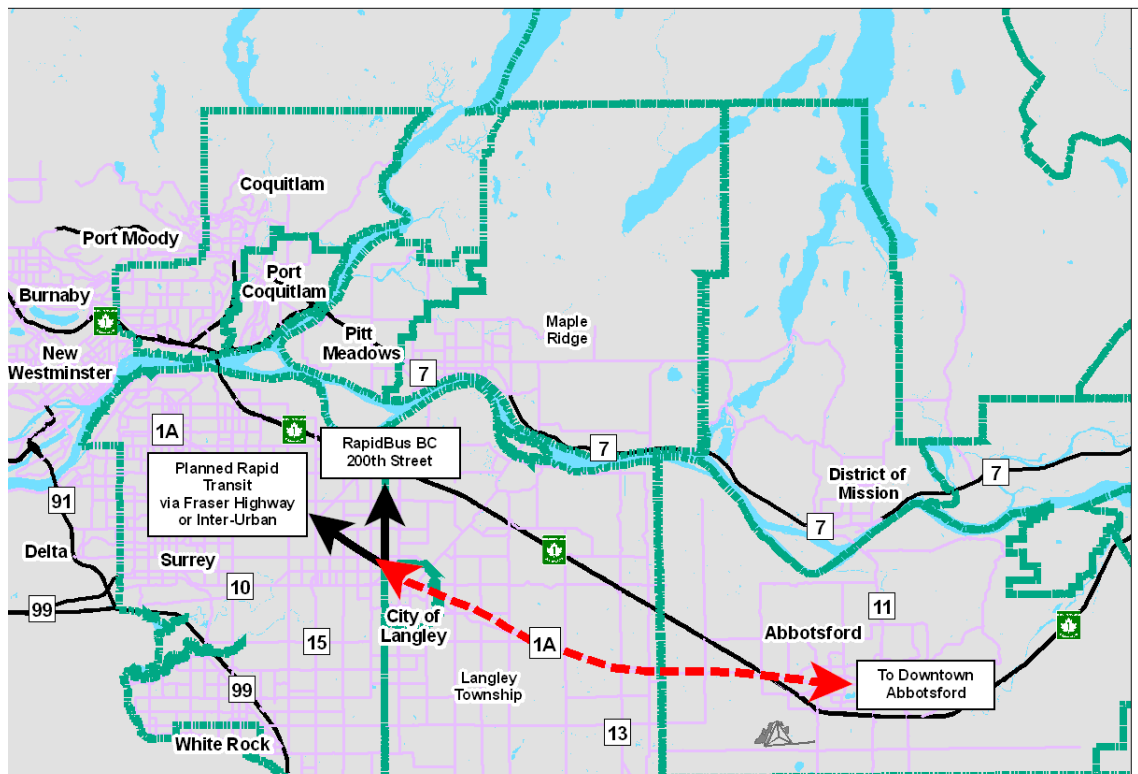
3.4.2 Fraser Highway – Abbotsford-Langley City/Willowbrook

A bus service could also be provided along Fraser Highway to serve a slightly different inter-regional transit market between Abbotsford and Langley City, as well as intermediate locations including Willowbrook and Aldergrove that could attract ridership to this enhanced connection. There is currently an inter-regional connection between Abbotsford and Langley with the ValleyMAX Route 21 – Aldergrove Connector and the TransLink Route 502 – Langley Centre/Aldergrove. This service requires a transfer within Aldergrove that is inconvenient given the limited service levels and potential to miss timed connections. The potential to attract ridership between Abbotsford and the Langley City area, however, is high given the size of the travel market and the number of intermediate activity nodes. Furthermore, this service would connect with proposed RapidBus services on 200th St and Highway 1 as well as other planned rapid transit services through to Scott Road Station in Surrey. Once again, extending service into



Metro Vancouver would require agreements on operating and fare policies between the two systems. Figure 3.9 highlights the alignment of this inter-regional service concept.

Figure 3.9 – Possible Fraser Highway Service Between Abbotsford and Langley



Although travel speeds along this corridor would not be as fast as Highway 1, there is some potential to enhance transit travel times with transit priority measures such as queue jumpers and signal detection at key intersections. Table 3.9 below provides a description of the key markets serviced, service features and support services and facilities.



Table 3.9 – Key Features of Fraser Hwy Abbotsford-Langley Inter-Regional Service

<p>Markets Served:</p> <ul style="list-style-type: none"> • <i>Central Area of Abbotsford (frequent transit & rapid bus services)</i> • <i>Abbotsford International Airport,</i> • <i>Aldergrove;</i> • <i>Langley downtown;</i> • <i>Willowbrook & Highway 10 commercial area</i> • <i>Transfer trips with other rapid transit services on Fraser Highway or Inter-urban line (to Fleetwood, Surrey Central, & SkyTrain), and on 200th Street (to north Langley/Surrey)</i> • <i>Half of westbound trips destined to Langley, other half to Surrey and other parts of Metro Vancouver</i>
<p>Premium Service Features to Consider:</p> <ul style="list-style-type: none"> • <i>Enhanced express Coach Bus downtown Abbotsford to Langley City & 200th Street on Fraser Highway. Current service includes transfer at Aldergrove (BC Transit to TransLink)</i> • <i>10 min peak and 20 min off-peak frequencies (from 60 min and 120 min today)</i> • <i>Evening and weekend services</i>
<p>Support Services & Facilities</p> <ul style="list-style-type: none"> • <i>Transit priority treatments at key intersections</i> • <i>Passenger amenities at key transfer points</i>

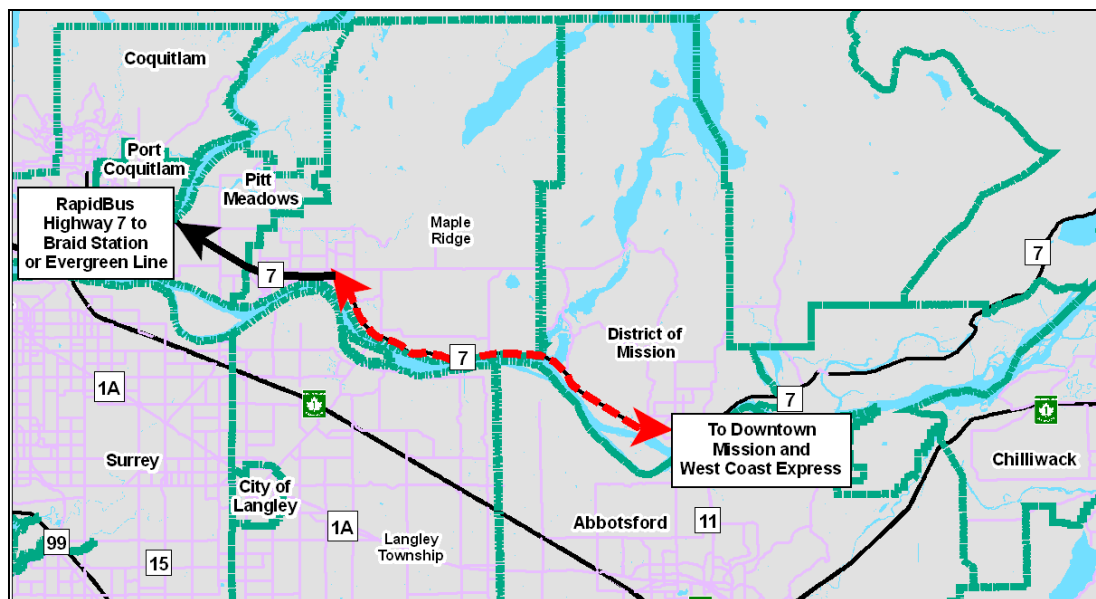
3.4.3 Highway 7 – Mission-Maple Ridge

This inter-regional connection between Mission and Maple Ridge would serve a growing travel market between Fraser Valley and the Northeast Sector of Metro Vancouver (Maple Ridge, Pitt Meadows, Port Coquitlam and Coquitlam). This service would be connected the Maple Ridge town centre, providing access to other local services. Recognizing that the markets for travel would include other Northeast Sector communities as well as the Millennium SkyTrain, this service may be integrated and operated as an extension of an existing TransLink service (Route 701 to Coquitlam Station) to reduce transfers and overall transit travel time. In the longer-term, this regional service could likely connect through to the Evergreen Line at Coquitlam Station.

Figure 3.10 highlights the alignment of this inter-regional service concept between downtown Mission and Maple Ridge. Within Mission, this regional service would also connect with local services planned for the Silverdale growth area providing an attractive connection through to Metro Vancouver as well as to Mission downtown and the waterfront area.



Figure 3.10 – Possible Highway 7 Service Between Mission and Maple Ridge



The key service characteristics are briefly highlighted below in Table 3.10.

Table 3.10 – Key Features of Highway 7 Mission-Maple Ridge Inter-Regional Service

Markets Served:

This service would supplement TrainBus with connections to growth areas of Silverdale and downtown Mission with:

- *downtown Maple Ridge and Pitt Meadows;*
- *commercial areas on Highway 7;*
- *transit services across the Golden Ears bridge*
- *downtown Port Coquitlam and Coquitlam*
- *Future Coquitlam Station of the Evergreen Line to other parts of Metro Vancouver*
- *Majority of trips from Mission destined to downtown Vancouver*

Premium Service Features to Consider:

- *Express Coach Bus service Mission downtown/station to Maple Ridge downtown/station extending through Northeast Sector*
- *10 min peak and 20 min off-peak frequencies*
- *Evening and weekend services*

Support Services & Facilities

- *Transit priority at major intersections*
- *Park-and-ride facilities in the western parts of Mission*



3.4.4 Summary of Inter-Regional Service Concepts

The economic evaluation and qualitative review of these inter-regional services are summarized in this section of the report. It should be noted that all concepts are evaluated as independent service concepts with key support facilities such as park-and-ride. For the Highway 1 and Fraser Highway service concepts between Abbotsford and Langley, it is anticipated that a portion of the 2031 ridership forecast would share the same market. Much like the regional concepts, service levels for the inter-regional concepts were determined based on the potential to attract ridership and the need to balance costs.

Table 3.11 below summarizes the economic performance of those inter-regional service concepts.

Table 3.11 – Quantitative Summary of Inter-Regional Service Concepts

Corridor Connection	Type of Vehicle	Route Length	Peak Transit Travel Time	2031 Daily Boards	Peak Frequency (off-peak)	Annual Service Hours	Ann Op & Veh Cost	Ann Cap Cost	Cost/Ride (\$)	Cost/Serv Hour
Units		(km)	(min)	(#psgr)	(min)	(hours)	(2031 mil)	(2031 mil)	(2031 \$)	(2031 \$)
Highway 1 Abbotsford-North Surrey	Express Coach Bus	30	35	4,000	10 (20)	25,600	\$3.6	\$3.3	\$5.75	\$270
Fraser Hwy Abbotsford-Langley	Express Coach Bus	32	40	3,800	10 (20)	31,600	\$4.6	\$0.3	\$4.30	\$155
Highway 7 Mission-Maple Ridge	Express Coach Bus	30	40	1,000	10 (20)	28,400	\$4.1	\$0.1	\$13.95	\$150

As noted above, the hours of services for each of these inter-regional concepts are significant ranging from over 23,000 hours through to 31,600 hours annually, while the ridership levels are significantly lower for the Highway 7 service between Mission and Maple Ridge. As such, the economic evaluation of the Highway 1 and Fraser Highway service concepts in terms of cost per ride of \$5.75 and \$4.30 respectively are much more attractive than the Highway 7 service at \$13.95 per ride. The higher relative cost per ride and cost per service hour for the Highway 1 service is entirely attributed to the additional capital cost for a dedicated bus shoulder lane which would be designed to provide fast, reliable service between Abbotsford and Metro Vancouver. Recognizing that the travel demands between Mission and other Northeast Sector communities of Metro Vancouver is not as significant as the demands south of the Fraser River, these results indicate that suitable peak and off-peak service levels would be slightly lower (15 minute peak and 30 minute off-peak) and that weekend services would also be limited.



The following table provides a qualitative description of the strengths, weaknesses and opportunities for each regional service concept.

Table 3.12 – Qualitative Summary of Inter-Regional Service Concepts

Corridor Connections	Type of Service	Strengths	Weaknesses	Opportunities
Highway 1 Abbotsford – North Surrey	Express Coach Bus	<ul style="list-style-type: none"> • Attractive peak service levels • Provides all day service • Relatively cost-effective for long-distance service (\$5.75/ride with priority treatments) • Priority treatment to minimize delays 	<ul style="list-style-type: none"> • Significant investment in annual operating and capital costs (>50% of today's operating budget) • Modest scale of planned growth and future development 	<ul style="list-style-type: none"> • Premium service features and fares similar to TrainBus • Service level to grow with ridership • Needs park-and-ride facilities at major interchanges
Fraser Highway Abbotsford – Langley City/Willowbrook	Express Coach Bus	<ul style="list-style-type: none"> • Enhances existing service • Removes transfer in Aldergrove to better serve market • Provides all day service • Relatively cost-effective for long-distance service (\$4.3 /ride) 	<ul style="list-style-type: none"> • Significant investment in annual operating and capital costs (>30% of today's operating budget) • Scale of planned development nearby potential stations is limited • Impacts of congestion and incidents could be significant 	<ul style="list-style-type: none"> • Ridership & service grow concurrently • Intersection transit priority treatments likely required • Relies on park-and-ride at key interceptor locations
Highway 7 Mission – Northeast Sector (Maple Ridge – Mission section only)	Express Coach Bus	<ul style="list-style-type: none"> • Frequent & direct service across north shore • Connects Mission to other Northeast Sector town centre markets • Provides local & regional connections to Silverdale growth area along Lougheed 	<ul style="list-style-type: none"> • Congestion & delays on the Highway 7 corridor impact transit • Requires connection or continuous services between Mission and Coquitlam Station (or transfer at Maple Ridge) • Significant annual operating and capital cost for expanding a regional service • moderate ridership levels for given service levels resulting in cost of \$13.95 per ride 	<ul style="list-style-type: none"> • Reduced peak and off-peak service levels to match potential transit ridership is required • Expanding to premium service features & fares similar to TrainBus • Should be integrated with TrainBus • Transit priority treatments at key intersections • Requires park-and-ride facilities at key nodes such as Silverdale and Mission central area



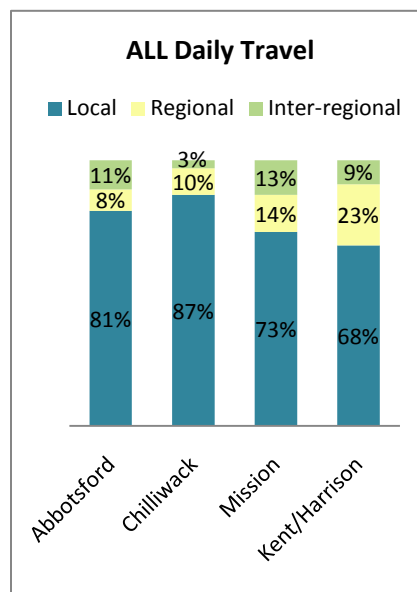
3.5 Review of Possibilities for Urban Rail

West Coast Express (WCE) currently serves the inter-regional market for Fraser Valley residents, largely to the downtown area of Vancouver with rail-based services. Of the approximately 600 people boarding West Coast Express in Mission each day, approximately 55% are from Mission and 40% are from Abbotsford. However, there has been ongoing interest in expanding commuter rail in the Fraser Valley for many years with a particular interest in the re-instatement of the Inter-Urban Rail (IUR) line connecting Abbotsford and Chilliwack to the Langley, Surrey and other parts of Metro Vancouver. This section explores these possibilities for providing rail-based services to connect the Fraser Valley to other parts of the region.

There are several possibilities for rail expansion in the Fraser Valley to serve key inter-regional travel markets between Abbotsford and Langley and the eastern areas of Surrey using existing rail rights-of-way. Existing rail corridors in the Fraser Valley consist of the Canadian Pacific Railway (CPR) and Southern Railway of British Columbia (SRY) line from Mission to Abbotsford and the SRY line from Scott Road in Surrey to Downtown Chilliwack with portions of this line that are shared with CPR and Canadian National (CN) railways. Both of these lines would require significant capital investment in terms of track upgrades, stations and rolling stock in order to provide heavy rail or light rail services.

The following sections examine the possible expansion of **commuter rail services** in the Fraser Valley over the next 20 years as part of the overall transit strategy. In particular, the extension of West Coast Express to Abbotsford is examined along with the expansion of rail on the IUR line between Langley-Surrey to Abbotsford and then to Chilliwack. The intention with this analysis was not to undertake a complete feasibility study of the provision of rail, but rather to undertake a high level screening of these options as part of the overall transit strategy to examine if the expansion of commuter rail services would be a priority over the next 20 years or so relative to other transit investments in the Fraser Valley transit system.

It should be noted that at the time of preparing this analysis, TransLink and the Ministry of Transportation and Infrastructure began the *Surrey Rapid Transit Extension Study*. This work is designed to look at urban rapid transit alternatives between the Scott Road Station in Surrey and the Langley regional town centre. In particular, it will specifically examine a range of rapid transit technologies such as Bus Rapid Transit, Light Rail Transit and Automated Light Rail Transit along various routes. In this regard, this TransLink study will not








examine commuter rail which is largely recognized as an inter-urban service that will be examined as part of *Strategic Review of Transit in the Fraser Valley*.

For the purpose of this assessment of commuter rail service for the Fraser Valley, the following commuter rail technology options were considered:

Table 3.13 – Potential Commuter Rail Technologies

Vehicle Type	Examples	Image
Heavy Rail Diesel Push-Pull	West Coast Express	
Heavy Rail Diesel Multiple Unit (DMU)	Budd cars on Vancouver Island	
Light Rail Diesel Multiple Unit (DMU)	Ottawa O-Train	

These possibilities are discussed further in the following sub sections that describe the potential alignment including stations, ridership and costs for the two possible rail corridors as follows:

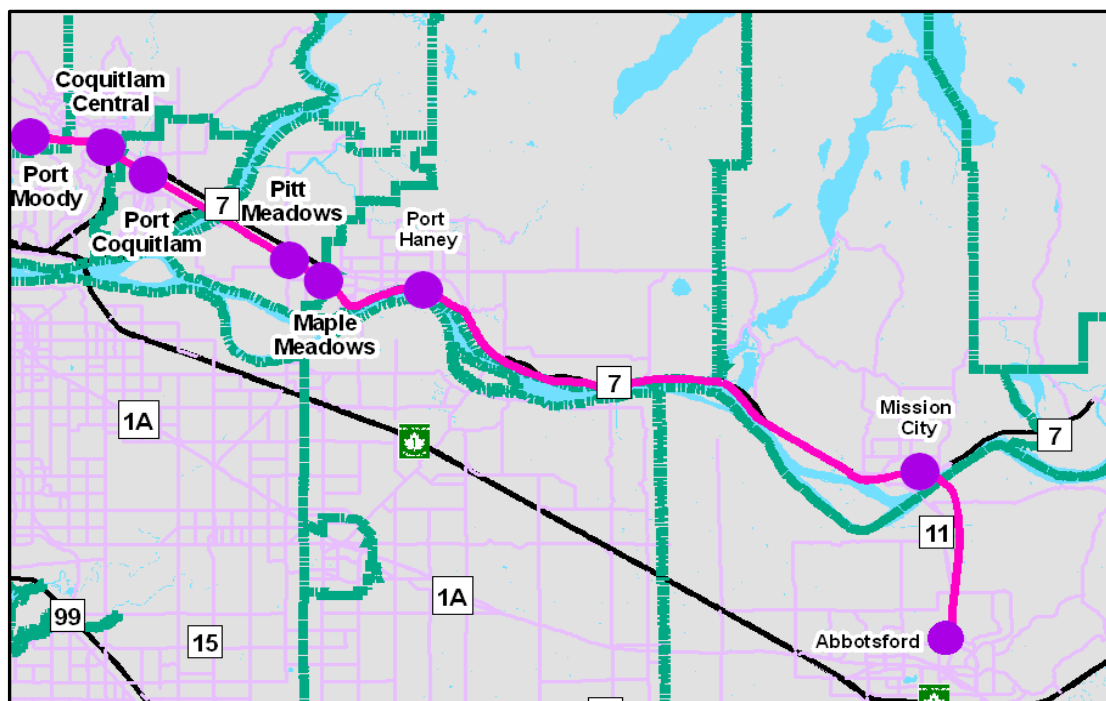
1. West Coast Express extension from Abbotsford to Mission
2. Inter-Urban Rail line services between the communities noted below:
 - Abbotsford and Surrey
 - Chilliwack to Surrey



3.5.1 Extension of West Coast Express to Abbotsford

There is an opportunity to extend the West Coast Express service from Mission to Abbotsford along the existing Canadian Pacific Railway and Southern Railway of British Columbia corridors across the existing rail bridge over the Fraser River. This 11 km extension would provide a continuous commuter rail service from Abbotsford to Downtown Vancouver. Figure 3.11 highlights the potential alignment and station locations for this extension that would provide a significant regional and inter-regional connection.

Figure 3.11 – WCE Extension Station Location and Alignment



As shown above, a station would be located in the eastern area of Abbotsford's downtown. Preliminary ridership analysis showed that there was little or no travel demand at intermediate locations along this alignment and, therefore, no other stations were proposed. Furthermore, any additional stations would only add travel time and have a downward effect on overall ridership as there are limited supporting land uses between Abbotsford and Mission.

The following sub sections describe the operating and service features, ridership potential and financial implications of this potential extension of West Coast Express service.



i. Service Description

Similar to the existing West Coast Express, this line would operate as a heavy commuter rail service during the peak periods in the peak direction at a headway of 30 minutes. In order to make best use of resources, this service would utilize the existing fleet of heavy diesel push-pull trains that would operate potentially from downtown Abbotsford.

The following provides a summary of the support services and facilities that would enhance the extension of West Coast Express service:

- Relocate Mission Station
- New Abbotsford and Silverdale Stations
- Expand Mission Park-and-ride lot
- New park-and-ride lots in Abbotsford and Silverdale
- New rail storage facility in Abbotsford
- Transit integration strategies at station areas

A portion of the existing track in Mission would have to be reconfigured in order to provide this service. The current Mission Station is located to the east of the Mission Junction where the east/west line meets the north south line. In order for northbound trains from Abbotsford to pickup and drop off passengers at the Mission Station, it would have to back-track along the east/west CPR mainline and switch tracks. A more efficient option from an operational and passenger point of view would be to relocate the Mission Station to the west of the junction so that trains could operate without having to back-track eastbound on their inbound journey. Both options come at a significant cost, whether it is through annual operating or capital cost.

Table 3.14 below summarizes the key features of this possible extension of West Coast Express.



Table 3.14 Key Features of the West Coast Express Extension

Feature	Assumption
Route Length	10.5 km Abbotsford to Mission
Line Time	11 min Abbotsford to Mission
Operating Performance	Max Operating speed = 60 kph Abbotsford to Mission Accel rate = 4 kph/s Decel rate = 4 kph/s Station dwell time = 30 sec
Stations	Downtown Abbotsford
Frequency	30 min (peak period, peak direction only)
Annual Service Hours	700
Vehicle Type	Heavy rail diesel, push-pull

ii. Ridership Potential

The extension of West Coast Express Service from Mission to Abbotsford is intended mainly to serve the following markets:

- Primary market serviced includes inter-regional trips between Abbotsford and downtown Vancouver as well as other Northeast Sector communities;
- Enhanced service to existing market in Abbotsford (40% of boardings in Mission);
- New station nearby Silverdale to serve growth area; and
- Majority of trips destined to downtown Vancouver.

The regional travel demand model – based on Abbotsford’s EMME Sub-Area model – was used as part of evaluating rail options in the Fraser Valley and estimating potential ridership for 2031 morning peak hour (7:30-8:30) conditions. The operating features described earlier were coded into the EMME model along with additional park-and-ride lots in order to estimate the highest likely ridership for this line.

As previously noted in the market analysis report, there are approximately 600 daily inbound trips made on West Coast Express each day from the Mission Station. With planned growth in the Fraser Valley and the extension to Abbotsford, an additional 300 daily inbound trips are estimated for the 2031 timeframe representing a moderate increase in ridership on the Fraser Valley portion of the entire line. The total daily ridership on the extension of WCE service to Abbotsford is 650 or 195,000 annual boardings.



iii. Preliminary Economic Evaluation

The current track configuration including stations, switches and possible double tracking along key segments will require substantial upgrading in order to run effective commuter rail services. There are several components of the existing track that need to be upgraded in order to run this extended service not to mention the additional annual operating and vehicle debt servicing costs. The following discussion highlights the financial analysis for the provision of rail service between Abbotsford and Mission. It should be noted that these are conceptual costs only (2010 \$) as part of a high level comparison with other transit options and priorities for the Fraser Valley.

- **Track Upgrade** – costs have been based on the recently completed “Technical Assessment of Operating Passenger Rail on the Interurban Corridor” by DRL Solutions in 2006. Estimates have been developed for upgrading the existing track including right-of-way requirements, switches, grade crossings, stations and all other relevant costs. The rough order of magnitude (ROM) capital cost to upgrade the track (not including vehicles) is approximately \$11.4 million per km. This upgrade would be financed over 30 years at a 6% interest rate. The total annualized cost to upgrade the track is calculated as follows:

Annualized track upgrade cost = 10.5 km * \$11.4 mil/km ÷ 13.6 amortization factor = **\$8.8 mil.**

- **Operating Costs** – include operator wages, vehicle maintenance, fuel, administration and any other relevant costs associated with operating rail services. A standard rate based on the average annual operating cost per service hour for West Coast Express was developed. Currently it costs approximately \$13 million annually to operate and maintain West Coast Express services which provides approximately 20,000 service hours over the year. This equates to approximately \$600/service hr to operate and maintain rail services similar to West Coast Express.

Annual operating costs = 700 service hours * \$600/service hr = **\$420,000**

- **Rolling Stock** – since the existing fleet of WCE trains could be utilized, some cost efficiencies can be realized. If the extension of WCE is only to Abbotsford, then no additional trains are required in order to maintain the current WCE schedule. Because of the increased passenger demands, however, additional cars will be required to maintain service levels and passenger comfort. The ridership analysis shows that an additional car will be required to meet peak hour passenger demands at a cost of \$3.4 million per vehicle. This would be financed at 6% over a 20 year period. The annual cost of purchasing these additional vehicles is as follows:



Annual Vehicle debt service = 1 veh * \$3.4 mil/veh ÷ 13.6 amortization factor = **\$250,000**

- **Cost per Ride** - the above annualized ridership and operating and capital cost information was used to estimate the cost per ride to provide rail service on the extended WCE corridor. Each cost component was summed up and divided by the annual ridership summarized as follows:

Cost per ride on WCE Extension = (\$8.8 million annualized capital to upgrade track + \$420,000 annual operating cost + \$260,000 million annual debt service for vehicles)/195,000 rides per year = **\$49/ride**

- **Cost per Service Hour** – the above annual service hours and operating and capital cost information was used to estimate the cost per service hour to extend the WCE service to Abbotsford. Each cost component was summed up and divided by the annual service hours as follows:

Cost per service hour on WCE Extension = (\$8.8 million annualized capital to upgrade track + \$420,000 annual operating cost + \$260,000 million annual debt service for vehicles)/700 service hours rides per year = **\$13,100/hr**

The following table summarizes the economic implications of extending the West Coast Express Service from Mission to Abbotsford in comparison to an expanded Highway 11 bus service that also provides early morning connections to the West Coast Express train in Mission.

Table 3.15 Economic Evaluation of the West Coast Extension to Abbotsford

Corridor Connection	Type of Vehicle	Route Length	Peak Transit Travel Time	2031 Daily Boards	Peak Frequency (off-peak)	Annual Service Hours	Ann Op & Veh Cost	Ann Cap Cost	Cost/ Ride (\$)	Cost/ Serv Hour
Units		(km)	(min)	(#psgr)	(min)	(hours)	(2031 mil)	(2031 mil)	(2031 \$)	(2031 \$)
West Coast Express <i>Abbotsford-Extension</i>	Heavy DMU	10.5	11	650	30 (none)	650	\$0.9	\$10.7	\$68.75	\$18,500
Highway 11 <i>Mission-Abbotsford</i>	Express Bus	12	20	1,800	10 (20)	18,300	\$2.5	\$0.1	\$4.80	\$140



As noted in *Foundation Paper #1 – Market Analysis*, approximately 600 daily trips today on West Coast Express board at the Mission Station, approximately 40% of which are Abbotsford residents. The forecast increase in West Coast Express ridership for 2031 of approximately 650 trips per day is largely attributed to a shift of existing riders from Abbotsford, planned growth as well as the extension of the commuter rail service. The additional operating cost in combination with the increase in capital cost for the extension of a rail service is not off-set by the increase in ridership. Overall, this extension would cost approximately \$72 per ride and \$19,500 per hour of service.

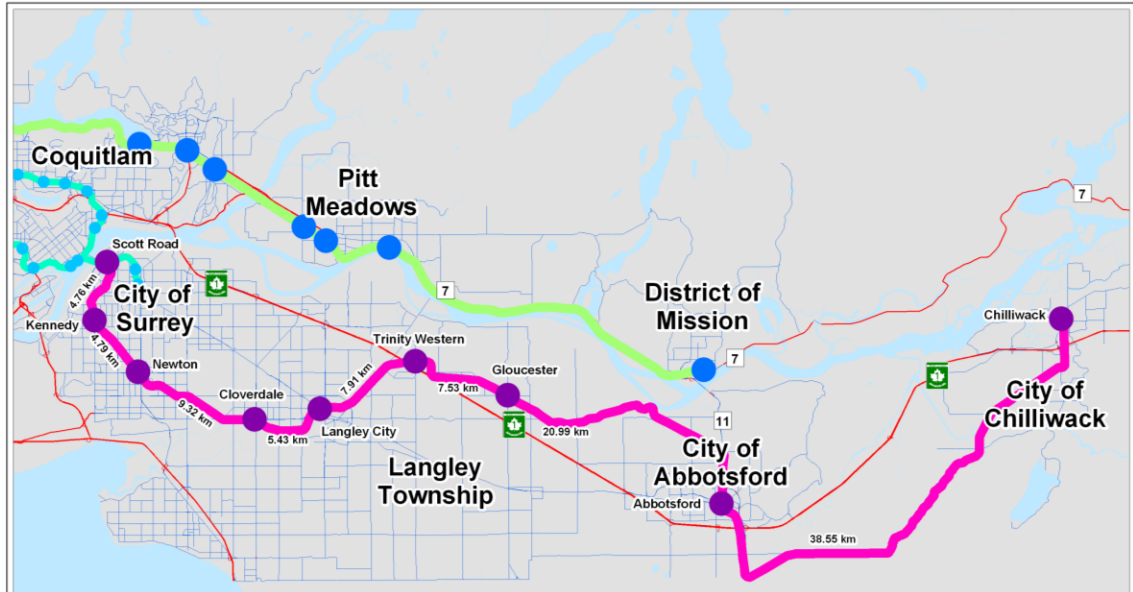
Although the extension of West Coast Express is not considered an alternative to the expansion of the Highway 11 Valley Connector service, the economic evaluation of both concepts shows that they are serving two different markets. None-the-less, the Highway 11 service appears to be the more realistic alternative to providing enhanced regional access to West Coast Express as well as an attractive increase to regional service between Abbotsford and Mission.

3.5.2 Inter-Urban Rail Line

In an effort to serve the long-term inter-regional travel demands between Abbotsford and Langley as well as the eastern areas of Surrey and beyond, this section of the report examines the feasibility of utilizing the Inter-Urban Rail (IUR) line for commuter rail transit services. The Inter-Urban corridor consists of the right-of-way and track of the Southern Railway of British Columbia (SRY) from the Scott Road SkyTrain Station in Surrey to downtown Chilliwack via Langley City and downtown Abbotsford. Parts of this corridor are shared with Canadian Pacific Railway (CPR) as well as Canadian National (CN) railway. Figure 3.12 illustrates the complete configuration of the 100 km corridor with proposed station locations and alignment.



Figure 3.12 – Inter-Urban Rail Line Route and Potential Station Locations



For the purpose of this high level review, a total of nine candidate stations are identified to provide adequate access to this line without sacrificing overall line time with too many stations. Any additional stations would reduce the end to end line time and likely reduce overall ridership.



Table 3.16 below summarizes the key features of possible commuter rail service on the Inter-Urban corridor.

Table 3.16 – Key Features of Rail Service on the Inter-Urban Corridor

Feature	Assumption
Route Length	99.3 km total
Line Time	91 min total
Operating Performance	Max operating speed = 80 kph Chilliwack to Abbotsford Max operating speed = 70 kph Abbotsford to Langley Max operating speed = 60 kph Langley to Scott Road Accel/decel rate = 4 kph/s Station dwell time = 30 sec
Stations	9 between Chilliwack and Scott Road inclusive
Park and Ride	4 additional lots
Frequency	30 min (peak period) Heavy DMU 30 min peak (60 min off peak) Light DMU
Vehicle Type	Diesel multiple unit, heavy rail Diesel multiple unit, light rail

The operating speed differs along each segment of the Inter-Urban corridor due to track curvature, number of at-grade roadway crossings and gradient. The following sub sections describe the service features of the entire IUR line as well as ridership potential and costs.

Similar to the WCE Extension, the Abbotsford EMME Sub-Area model was used as part of evaluating rail options in the Fraser Valley and estimating potential ridership. The operating features described earlier were coded into the EMME model along with additional park and ride lots at key locations in order to estimate the highest likely ridership for this line. Park and ride facilities were included at the following locations in order to maximize ridership potential along the IUR line:

- Downtown Chilliwack
- Downtown Abbotsford
- Downtown Langley
- Cloverdale

For the purpose of forecasting transit ridership, two distinct service periods were examined: a **peak only service** (peak period and peak direction); as well as an **all day service**. For analysis purposes, 30 minute frequencies were used for each scenario.



Table 3.17 below summarizes the daily and annual ridership estimates along the entire Inter-urban Line for the periods of service which are common throughout the remainder of the analysis. These results indicate that the forecast 2031 daily ridership would be approximately 3,770 trips with a peak only service and 6,550 trips for a daily commuter rail service. It should be recognized that almost 70% of all projected trips generated on the Inter-urban Line are concentrated within the Langley-Surrey segment where more urban forms of rapid transit services are being considered. For comparative purposes, it is also worth noting that the West Coast Express serves over 12,000 trips per day as a peak only service.

Table 3.17 – Projected 2031 Ridership on the Inter-urban Line

	PEAK ONLY SERVICE	DAILY SERVICE
Abbotsford – Surrey		
Daily Ridership	3,770	6,550
Annual Ridership	980,000	1,703,000
Chilliwack – Surrey		
Daily Ridership	3,900	6,800
Annual Ridership	1,014,000	1,768,000

The market analysis of travel patterns shows that many West Coast Express customers boarding in Mission are from Abbotsford. Because of the similarities in markets served by the Inter-urban Line and West Coast Express, it is estimated that a portion of these projected 2031 trips would shift to the Inter-urban Line.

The current track configuration including stations, switches and possible double tracking along key segments will require substantial upgrading in order to run efficient and safe commuter rail services. There are several components of the existing track that need to be upgraded in order to run this service not to mention the additional annual operating and vehicle debt servicing costs. A variety of sources were referenced in order to develop the conceptual cost of upgrading and operating rail on the Inter-urban Line. Each cost component was developed as an annual estimate in order to better understand the long term financial requirements to run rail services over a 20-30 year lifecycle.

Track Upgrade – costs have largely been based on work completed as part of the South of Fraser Area Transit Plan². Estimates have been developed for upgrading the existing track including right-of-way requirements, switches, grade crossings, stations and all other relevant costs. The rough order of

² *Technical Assessment of Operating Passenger Rail on the Interurban Corridor, DRL Solutions, 2006*



magnitude (ROM) capital cost to upgrade the track (not including vehicles) is approximately \$11.4 million and \$18.6 million per km for the Heavy DMU and Light DMU options respectively. The track upgrade costs are assumed to be annualized over a 30 year term at 6% interest. The following general formula was used to calculate track upgrade costs for each option:

$$\text{Annualized track upgrade cost} = \text{track length (km)} * \text{cost per km} * 13.6 \text{ amortization factor}$$

Operating Cost – operating costs include operator wages, vehicle maintenance, fuel, administration and other relevant costs with operating rail services. A standard rate based on the average annual operating costs per service hour for West Coast Express was developed for the Heavy DMU option. As mentioned in the previous section, this equates to approximately \$600/service hr to operate and maintain rail services similar to West Coast Express. For the Light DMU option, rail operating costs from other systems were generally in the range of \$300/hr. Operating costs were assumed to be annualized based on the estimate of annual service hours that are provided. Vehicle operating costs were calculated using the following general formula:

$$\text{Annual operating cost} = \text{annual service hours} * \$ \text{ per service hour rate}$$

Rolling Stock – new rail vehicles will be required to operate the IUR line at a cost of approximately \$3.4 million per vehicle based on the DRL report for both the Heavy DMU and Light DMU options. The vehicle requirements are based on the cycle time which includes the line time plus recovery as well as a vehicle spare ratio. The vehicle debt servicing cost of purchasing a rail vehicle over a 20 year period at 6% is \$260,000 per year. The following general formula was used to calculate the annual vehicle debt servicing costs:

$$\text{Annual vehicle debt service} = \# \text{ vehicles} * \$250,000 * 1.15 \text{ spares}$$

Cost per Ride - the above annualized ridership and operating and capital cost information was used to estimate the cost per ride to provide rail service on the Inter-Urban corridor. Each cost component was summed up and divided by the annual ridership summarized as follows:

$$\text{Cost per ride} = (\text{annualized capital to upgrade track} + \text{annual operating costs} + \text{annual debt service for vehicles}) / \text{rides per year}$$

Cost per Service Hour – the above annual service hours and operating and capital cost information was used to estimate the cost per service hour. Each cost component was summed up and divided by the annual service hours as follows:



$$\text{Cost per service hour} = (\text{annualized capital to upgrade track} + \text{annual operating cost} + \text{annual debt service for vehicles}) / \text{service hours per year}$$

For the purpose of this study, commuter rail service between Abbotsford and Surrey Scott Road Station is examined and compared with a Chilliwack to Scott Road Station service for both the peak and off-peak periods.

a) Inter-Urban Line Between Abbotsford and Surrey

As previously indicated, the Surrey Rapid Transit Study being prepared by TransLink and MoTI will examine urban rapid transit services such as Light Rail Transit. For the purpose of this study, the review of rail transit on the inter-urban line between Scott Road Station in Surrey and Abbotsford (via Langley City) is examined as a commuter rail service largely to understand the potential feasibility as part of an overall 20 year strategy for transit in comparison to other bus transit services examined in Section 3.2 of this document.

i. Service Description

This section of the Inter-Urban Rail line from Surrey to Langley is intended mainly to serve the following markets:

- City of Abbotsford;
- Gloucester Estates industrial area;
- Trinity College;
- Langley downtown;
- Willowbrook & Highway 10 commercial area;
- Langley downtown;
- Transfer trips with 200th Street rapid transit
- Cloverdale and Newton;
- North Surrey;
- Transfer trips with SkyTrain at Scott Rd Station; and

This segment of the Inter-urban Line was assumed to be operated as a commuter rail service using either the Heavy DMU or Light DMU technology options. For the purpose of this analysis, heavy DMU is examined as a peak period service (with a higher hourly operating cost (\$600/hr) and lower capital cost (\$11.4 million/km)) and light DMU is used for the analysis of all-day service (with a lower operating cost (\$300/hr) and higher capital cost (\$18.6 million/km)) as previously noted.



In total, nine potential stations would provide adequate access to this line without sacrificing overall travel time, while ensuring reasonable connections to generate ridership. In this regard, the station locations provide access to key nodes along this segment of the Inter-urban Line including Langley City, Trinity Western, Gloucester Industrial and downtown Abbotsford. The following table summarizes the key features of possible commuter rail service on the Inter-Urban corridor from Abbotsford to Langley.

Table 2.23 – Inter-Urban Corridor Summary Features (Surrey to Abbotsford)

Feature	Assumption
Route Length	61 km
Line Time	60 min
Operating Performance	Max operating speed = 60 kph Accel/decel rate = 4 kph/s Station dwell time = 30 sec
Stations	5 between Scott Rd and Langley City 4 between Langley City and Abbotsford
Frequency	30 min (peak period only) 30 min (60 min off peak)
Annual Service Hours	Peak Period Service - 3,500 hours Daily Service - 8,700 hours
Vehicle Types	Peak Period Service – Diesel multiple unit, heavy rail Daily Service – Diesel multiple unit, light rail

ii. Preliminary Economic Evaluation

Combining the planned service and facility characteristics with the 2031 ridership projections provides sufficient information to undertake the preliminary economic analysis of the Inter-urban Line between Abbotsford and Surrey's Scott Road Station. Table 3.18 below summarizes the key quantitative measures in which to evaluate the preliminary feasibility of the inter-urban line in comparison with other inter-regional transit services examined in Section 3.2.



**Table 3.18 – Economic Evaluation of the Inter-Urban Line
(Abbotsford to Surrey)**

Corridor Connection	Type of Vehicle	Route Length	Peak Transit Travel Time	2031 Daily Boards	Peak Frequency (off-peak)	Annual Service Hours	Ann Op & Veh Cost	Ann Cap Cost	Cost/ Ride (\$)	Cost/ Serv Hour
Units		(km)	(min)	(#psgr)	(min)	(hours)	(2031 mil)	(2031 mil)	(2031 \$)	(2031 \$)
Inter-urban Line <i>Abbotsford-Surrey Scott Road Station</i>	Heavy DMU	61	60	3,770	30 (none)	3,500	\$6.9	\$62	\$70.3	\$19,750
	Light DMU	61	60	6,550	30 (60)	8,700	\$7.7	\$101	\$63.9	\$12,500
Highway 1 <i>Abbotsford-North Surrey 200th St</i>	Express Coach Bus	30	35	4,000	10 (20)	25,600	\$3.6	\$3.3	\$5.75	\$270
Fraser Hwy <i>Abbotsford-Langley</i>	Express Coach Bus	32	40	3,800	10 (20)	31,600	\$4.6	\$0.3	\$4.30	\$155

The peak period operation of the Heavy DMU would require approximately 3,500 of annual service hours for the entire Inter-urban Line between Abbotsford and Scott Road Station in Surrey. The annual capital and operating cost for this service is estimated to be almost \$70 million per year (\$6.9 operating and vehicle debt and \$62 million in capital costs) or \$19,750 per hour of service. Assuming that other transit services would be competing with the Inter-urban Line in the Langley and Surrey areas, the ridership estimate for 2031 would result in a system cost of \$70.30 per ride.

A slightly longer period of service was also examined using the more costly Light DMU vehicle with a lower hourly operating cost for the anticipated 8,700 hours of annual service. Because of the significantly higher capital cost, this service is projected to cost almost \$110 million (2031 \$) annually (\$7.7 million per year in operating and vehicle debt cost and \$101 million in capital costs) or at \$12,500 per service hour. The projected 2031 average cost for the daily service would realistically be approximately \$64 per ride.

Once again, it should be noted that almost 70% of the ridership (and cost recovery) occurs in the Surrey to Langley section of the Inter-urban Line. This pattern would suggest that the projected 2031 cost per ride for Abbotsford to Langley segment is much higher, and that the needs in the Langley to Scott Road Station for rapid transit are distinctly different.



Comparing the peak only or daily service concepts on the Inter-urban Line between Abbotsford and Scott Road Stations with other inter-urban transit services along Highway 1 or the Fraser Highway corridors shows a stark difference in the economic performance. Both bus-based concepts provide significantly more attractive service levels (10 minute peak and 20 minute off-peak) and annual hours (25,000-31,000) than the Inter-urban Line through to Scott Road Station. Despite the significant difference in services, the lower operating and capital cost of the bus-based concepts produce more attractive results when measured on a cost per ride and per service hour. In other words, the level of transit subsidy beyond the farebox recovery for the bus-based service concepts is much more reasonable than the extensive subsidy required for the development of the Inter-urban Line over the next 20 years.

b) Inter-urban Line between Chilliwack and Surrey

The Chilliwack to Abbotsford section of the Inter-urban Line is added to the previous segment between Abbotsford and Surrey's Scott Road Station to complete the screening analysis and preliminary economic evaluation.

i. Service Description

The addition of the Inter-urban Line to downtown Chilliwack would require extensive track work and significantly more hours of service. Consistent with the previous analysis, the peak only service is analyzed as a Heavy DMU and the daily service is examined as a Light DMU to provide a high level comparison of the technology alternatives for commuter rail services.

Table 3.19 below summarizes the key characteristics of the additional segment examined in this section of the study. Overall, there are ten potential stations identified for the inter-urban corridor to provide reasonable access to maximize ridership without sacrificing overall travel time.



**Table 3.19 – Inter-Urban Corridor Summary Features
(Surrey to Chilliwack)**

Feature	Assumption
Route Length	100 km
Line Time	90 min
Operating Performance	Max operating speed = 60 kph Accel/decel rate = 4 kph/s Station dwell time = 30 sec
Stations	5 between Scott Rd and Langley City 4 between Langley City and Abbotsford Downtown Chilliwack
Frequency	30 min (peak period only) 30 min (60 min off peak)
Annual Service Hours	Peak Period Service - 5,200 hours Daily Service - 13,000 hours
Vehicle Types	Peak Period Service – Diesel multiple unit, heavy rail Daily Service – Diesel multiple unit, light rail

ii. Financial Implications

Combining the planned service and facility characteristics of the Inter-urban Line between Chilliwack and Scott Road Station in Surrey with the 2031 ridership projections provides sufficient information to undertake the preliminary economic analysis of the Inter-urban Line between Abbotsford and Surrey's Scott Road Station. Table 3.20 below summarizes the key quantitative measures in which to evaluate the preliminary feasibility of the inter-urban line in comparison with other inter-regional transit services examined in Section 3.2.



**Table 2.20 – Economic Evaluation of the Inter-Urban Line
(Chilliwack to Surrey)**

Corridor Connection	Type of Vehicle	Route Length	Peak Transit Travel Time	2031 Daily Boards	Peak Frequency (off-peak)	Annual Service Hours	Ann Op & Veh Cost	Ann Cap Cost	Cost/ Ride (\$)	Cost/ Serv Hour
Units		(km)	(min)	(#psgr)	(min)	(hours)	(2031 mil)	(2031 mil)	(2031 \$)	(2031 \$)
Inter-urban Line <i>Chilliwack – Surrey Scott Road Station</i>	Heavy DMU	100	90	3,900	30 (none)	5,200	\$10.3	\$101	\$110	\$21,500
	Light DMU	100	90	6,800	30 (60)	13,000	\$11.5	\$165	\$100	\$13,600
Highway 1 <i>Abbotsford-North Surrey 200th St</i>	Express Coach Bus	30	35	4,000	10 (20)	25,600	\$3.6	\$3.3	\$5.75	\$270
Fraser Hwy <i>Abbotsford-Langley</i>	Express Coach Bus	32	40	3,800	10 (20)	31,600	\$4.6	\$0.3	\$4.30	\$155
Highway 1 <i>Chilliwack – Abbotsford</i>	Express Coach Bus	30	30	800	30 (60)	7,600	\$1.0	\$0.1	\$4.30	\$135

Overall, the preliminary economic analysis shows that the addition of the Chilliwack segment of the Inter-urban Line significantly increases the annualized costs (2031 \$) to anywhere from approximately \$110 million to \$175 million per year for operating, vehicle and capital. However, the projected 2031 ridership does not grow to the same degree, resulting in a higher system cost of \$100 to \$110 per ride.

Once again, the results of the Inter-urban Line analysis should be compared with the bus-based regional and inter-regional services examined in Section 3.4 – specifically the Highway 1 service (Chilliwack – Abbotsford and Abbotsford – Langley/Surrey). The projected transit travel markets for these differing services would strongly suggest that an attractive bus-based system would provide significantly more service hours while effectively serving the communities of the Fraser Valley for at least the next 20 years.



3.5.3 Summary of Rail Analysis

The West Coast Express currently serves a regional market for Fraser Valley residents, largely to the downtown area. However, there has been ongoing interest in expanding the rail system in the Fraser Valley for many years with a particular interest in the re-instatement of the Inter-urban Line connecting Abbotsford and Chilliwack to the Langley, Surrey and other parts of Metro Vancouver. This section of the study examined the extension of West Coast Express to Abbotsford as well as the Inter-urban Line to assess the preliminary benefits of increased access to inter-regional rail service in the very long-term in comparison to other bus based services. Table 3.21 below provides a qualitative summary of the rail analysis as described in Section 3.5 of this report.

While an expanded rail network remains a possible feature of the transit system in the Fraser Valley for the long-term, the provision of rail is beyond the long-term transit strategy for several reasons:

- Significant investment is already required in the Fraser Valley just to get a desirable level of local, regional and inter- regional transit to move from a \$10 million per year system to almost \$90 million in 2031. The 2031 annual operating and debt service cost for a commuter rail service along the Inter-urban Line between Abbotsford and Surrey are anywhere from \$70 to \$110 million per year would likely exceed the cost of expanding the entire transit system for the Fraser Valley.
- The projected 2031 cost per ride (\$70 - \$107 / ride) and cost per service hour (\$19,750 - \$21,500/hr) for a commuter rail service on the Inter-urban Line and similar cost for the extension of the West Coast Express are significantly higher than most bus based alternatives considered such as a premium bus service in a dedicated lane on the Highway 1, Fraser Highway and Highway 11 corridors (\$4 to \$6 per ride and \$150 to \$275 per service hour).
- In general terms, the long-term transit system for the Fraser Valley could require a 400% increase in service hours over the next 20 to 30 years (to over 540,000 hours annually). A peak only, commuter rail service for the entire Inter-urban Line would provide less than 1% of the service hours identified in order to implement the long-term strategy for the Fraser Valley.



Table 3.21 – Summary of Strengths, Weaknesses and Opportunities of Rail Services in the Fraser Valley

Railway Connections	Type of Service	Strengths	Weaknesses	Opportunities
WCE Expansion Abbotsford – Mission	Heavy DMU Push-Pull	<ul style="list-style-type: none"> Primarily serves the Vancouver downtown travel market (>80%) Slight increase in transit mode share for downtown trips Potential to reduce driving trips to Mission Potential for additional growth and development near station areas 	<ul style="list-style-type: none"> Does not serve Abbotsford-Mission markets Peak period & direction only service Most Abbotsford riders currently boarding at Mission Station Need to relocate existing Mission Station to edge of downtown Need to new station and 'staging' area for storing trains in Abbotsford Difficult connections with key nodes or local services High operating and capital cost for extension Cost per ride (\$73) and service hour (\$19,500) is very high 	<ul style="list-style-type: none"> New station serving the Silverdale area with or without Abbotsford extension Park-and-ride facilities required at Abbotsford and Silverdale area Significantly enhance regional service between Mission and Abbotsford and provide an early morning service to connect with WCE
Inter-urban Line Surrey Scott Rd – Abbotsford	Heavy or Light DMU	<ul style="list-style-type: none"> Provides connection to Scott Rd Station 70% of travel is between the Langley and Surrey Moderate intermediate destinations 	<ul style="list-style-type: none"> Modest daily travel between Abbotsford and Langley and Surrey Shares portions of West Coast Express market Significant number of at-grade rail crossings Sharing a freight corridor and would likely require double tracking in some areas Many competitive bus-based services already planned Limited planned development nearby potential stations Significant capital cost to implement High cost per ride (\$64 to \$70) and cost per service hour (\$12,500 to \$19,750) Difficult to stage implementation over several years to grow ridership 	<ul style="list-style-type: none"> Bus-based services could be provided along Fraser Hwy and Highway 1 to develop transit ridership Right-of-way can be preserved for the long-term potential of transit
Inter-urban Line Surrey Scott Rd – Chilliwack	Heavy or Light DMU	<ul style="list-style-type: none"> Same as above 	<ul style="list-style-type: none"> Same as above Marginal ridership increase projected with extension to Chilliwack Very high cost per ride (\$100 to \$110) and cost per service hour (\$13,600 to \$21,500) 	<ul style="list-style-type: none"> Bus based services along the Highway 1 corridor would provide attractive regional services and connections to inter-regional services to Metro Vancouver



- The projected 2031 annual ridership for the entire Inter-urban Line of 1.0 to 1.75 million passengers (most of which is between Langley and Surrey section) would be comparable to the projected ridership for an all day, frequent express bus service operating in a priority lane on Highway 1 between Abbotsford and North Langley-Surrey. In this regard, the ridership for the Inter-urban Line would be less than 5% of the entire projected transit ridership for the Fraser Valley. It is once again worth noting that 70% of the ridership for the Inter-urban Line is on the segment between Langley and Scott Road Station in Surrey and unrelated to the Fraser Valley.

Although an inter-regional railway service between the Fraser Valley and Metro Vancouver may be part of a long-term future, a strong foundation of local, regional and inter-regional services is an essential starting point over the next 20 years or so. None-the-less, opportunities for rail service between Chilliwack-Abbotsford and Langley/Surrey should be retained for a possible future service. This would include preserving rail corridors in the Fraser Valley Regional District and adjacent Metro Vancouver, in addition to establishing agreements between TransLink, BC Transit, the Ministry of transportation, local municipalities as well as various railway companies.